BRITISH TUNNELLING SOCIETY

England & Wales · Charity number 1017887

Details

Other names	B T S
Status	Registered
Legal form	Other
Registered	1993-03-02
Register	View on the Charity Commission register

Contact

Address	Institution Of Civil Engineers 1 Great George Street London SW1P 3AA
Phone	020 7665 2238
Email	bts@ice.org.uk
Website	www.britishtunnelling.com

Activities

Objects: TO ADVANCE THE EDUCATION OF THE PUBLIC IN AND TO PROMOTE THE ART AND SCIENCE OF TUNNELLING,INCLUDING THE CREATION AND USE OF UNDERGROUND SPACE BY FOSTERING UNDERSTANDING, EXPERIENCE, INTEREST AND RESEARCH THEREIN

Activities: The mainstay of the BTS' activities is the programme of discussions and presentations held at the ICE each month. The BTS ran two courses this year and participated in one conference. The BTS also held an Annual Dinner in May. Tunnels and Tunnelling continues to be delivered to all members on a monthly basis.

Classification

- **How:** Makes Grants To Individuals, Provides Advocacy/advice/information, Sponsors Or Undertakes Research
- **What:** Education/training
- **Who:** The General Public/mankind

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Geography

- Northern Ireland
- Scotland
- Throughout England And Wales

Finances

Period end	Income	Expenditure	Assets	Employees
2024-12-31	-	-	-	-
2023-12-31	£316,988	£300,326	-	-
2022-12-31	£349,337	£305,056	-	-
2021-12-31	£146,014	£114,728	-	-
2020-12-31	£127,757	£119,753	-	-
2019-12-31	£348,987	£269,089	-	-
2018-12-31	£296,487	£254,260	-	-

Trustees

Name	Role	Appointed
Alastair Philip Charles Smith	Chair	2024-05-25
Alex Tony Vaughan		2026-05-21
Arabel Vilas Serin		2015-05-15
Christoph Eberle		2026-05-21
Jagjit Chima		2026-05-21
Jonathan Austin		2025-05-15
Mark Kirkbride		2026-05-21
Nicholas Lock		2024-05-16
Omar Mutasim Mohammed		2024-05-16
Richard Neil Sutherden		2026-05-21
Steven Antony Coupland Parker		2024-05-16

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Accounts

British Tunnelling Society

Annual Report and Accounts 2023

James Clark Medal Winners lunch

Rod Young, BTS Chair
British Tunnelling Society
bts.chair@britishtunnelling.org.uk

Executive Summary

Ring Building on Thames Tideway West

Executive Summary

In 2022 we had near normality back to the BTS and the industry, 2023 was fully back with the famous Thursday evening meeting "BTS Sausage & Chips" and it was great to see the ICE bar open and to see the ICE staff again.

Projects again achieved the preparation and launch, breakthrough and turnaround of a number of TBMs for major projects such as HS2 and Silvertown, as well as key progress on future procurement announcements, Stonehenge, Sizewell C, Coire Glas, Snowdonia, HARP as well as numerous smaller diameter/length utility crossings.

Our membership saw a change in some areas from 2022, Individual membership both UK and Overseas fell slightly as did student & retired memberships, young members saw a further increase, and corporate membership increased by 1.

The year saw a full programme of BTS and BTSYM evening lectures being held both in person at the ICE and online via our YouTube channel. Attendance numbers did return to pre covid, we feel this was for several reasons: covid working reducing, the ICE Bar & the famous "BTS Sausage & Chips" being available after staffing shortages and then the refurb. Unfortunately we were required to have several meetings in the Godfrey Mitchell Theatre, which we filled and especially on one evening we had to have an additional area with a full sized screen to accommodate the overspill. We have had a good range of topics at the evening events and sustained a high level of online viewing.

The Annual Dinner was held at the end of April, slightly earlier than usual to accommodate the King's Coronation. Table numbers were reduced from 2022 as it had been slightly crowded post covid due to

high demand. The evening followed the established format, champagne reception, fine dinner, then the Chair's address from Rod Young. Our speaker, the football legend Kevin Keegan, focused on his career from starting at Scunthorpe Utd, to Liverpool, Hamburger SV & Newcastle United. Thanks were given to John Scholey for another year of organising the dinner and also to John Corcoran.

We held the Harold Harding Prize competition for Tunnellers under the age of 33 in April with the winner being Jake Rankin for his paper "Artificial Intelligence for Forecasting Tunnelling Progress". Jake attended the BTS Dinner as a guest on the Chair's top table and was presented with his certificate & book. Congratulations also to the runners up Ricardo Manias & Dr. Agustin Ruiz Lopez.

Like other events, the Underground Design and Construction Course was once again held at Warwick University and the Underground Health & Safety Course at the ICE, numbers were back to pre-covid. Thanks to all the industry experts that prepared and presented at both courses.

The 2023 James Clark Medal was awarded to Andy Alder, and we presented his award at our June evening lecture.

We held the James Clark Medal Winner's Lunch on 19 October 2023, and it was fabulous to see all the past winners together, so much Tunnelling history/knowledge all in one room.

The 4th edition of the Specification for Tunnelling was completed and publicised as planned on the BTS website at the Dec evening meeting as the Technical Sub Committee Chair Christoph Eberle was giving an outline of the specification to us all, and the latest edition is available free to download from the BTS website.

The Health & Safety and Standards Committee have worked on the British Standards, CEN Standards, Compressed Air Working and ITA Guidance and the documents are at various point of completion.

Plans for the 50th Anniversary Book continue, the number of photos, memories, stories and projects put forward has exceeded expectations and the book size has grown, the result being publication will now be in 2024. The size of book is proving what a history the BTS & Tunnelling Industry has had over the past 50 yrs.

I would like to thank all the committee for all their support and effort during my year as Chair. I am incredibly grateful for the passion and enthusiasm of our individual, corporate and committee members and what has been achieved by their voluntary efforts.

I finished my summary last year using my words from my "David Wallis Lecture 2022" – the UK Tunnelling Industry has A Past to Be Proud Off, A Future That Looks Green.
Well, nothing has changed, if anything it has got better, which will give our Society opportunities to significantly contribute to the Tunnelling workload in the years ahead.

Rod Young
BTS Chair

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1. BTS Committee

Chair: Rod Young, Barhale Ltd
Vice Chair: John Corcoran, BMB JV (Thames Tideway)
Immediate Past Chair: Kate Cooksey, Morgan Sindall

Elected Members and Trustees

Name	Company	Term	Responsibility
Alastair Smith	Jacobs	Retired 2023	Communications
Christoph Eberle	Mott MacDonald	Retired 2023	Technical
Jérôme Furge	Bouygues Travaux Publics	Retired 2023	Conference
Mehdi Hosseini	London Bridge Associates	Retired 2023	Tunnelling Database
Richard Sutherden	J Murphy & Sons Limited	Retires 2024	Papers & Meetings
Mike King	MKTunnelling Limited	Retires 2024	Awards & Courses
Tim Smart	HS2 Ltd	Retires 2024	Education
Daniel Garbutt	Nuclear Decommissioning Authority	Retires 2025	ITA Lead
Divik Bandopadhyaya	London Bridge Associates	Retires 2025	Digital Delivery & Logistics, Website
John Greenhalgh	Nv Bekaert Sa	Retires 2025	
Bethan Haig	Dr Sauer & Partners	Retires 2026	Technical
John Kinnear	Jacobs	Retires 2026	
Russell Mason	J3M Construction Training Limited	Retires 2026	
Ken Kwok	Bouygues Travaux Publics (UK Branch)	Retires 2026	

Co-opted Members:

Name	Company	Responsibility
Alastair Smith	Jacobs	Communications
Sarah Langley	Sika Ltd	50th anniversary celebrations
John Corcoran	BMB JV (Thames Tideway)	Annual Dinner
Ken Spiby	London Bridge Associates	50th anniversary celebrations
Mark Leggett	Mott MacDonald	T&TI Editorial Advisory Board
John Scholey	Retired	Annual Dinner
Paul Perry	Hewson Consulting Engineers Ltd	BGA, PHEW Liaison
Shani Wallis	Journalist	Media Relations and Publishing
George Doulkas	Strabag UK Ltd	Young Members Chair (from 3 November 2022)
Thomas Macgowan	Bedi Consulting	Young Members Chair (from 2 November 2023)

Damian McGirr	COWI UK Ltd	ITA Executive Committee
Patrick Reynolds	Compelo	Tunnels and Tunnelling magazine
Roger Bridge	Balfour Beatty	Education, Think Deep

Institutional Representatives:

Name	Company	Responsibility
Sean Martin	Murphy Group	Pipe Jacking Association
Bill Grose	Bill Grose Consulting	Institution of Civil Engineers, APPGI, ITIG
Andrew Hindmarch	Mott MacDonald Ltd	Institute of Materials, Minerals, and Mining
Donald Lamont	Hyperbaric & Tunnel Safety Ltd	Health and Safety, Technical

2. Chair's Report

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This I feel is allowing the society to engage with a wider community. The BTSYM have for another year been fostering links to other tunnelling groups around the world, these of course being done virtually, taking account of the time zones.

I am incredibly thankful to all our speakers who have all given their time to come and present to us and share their knowledge and experience, with many having made an exceptional additional level of preparation to help make each of our events a success. The wide and varied selection of evening presentations not only showcases what our industry can do but it also continues to be a leading light in the knowledge sharing activities of the ICE and its Associated Societies.

The Annual Dinner was held at the end of April, slightly earlier than usual to accommodate the King's Coronation. Table numbers were reduced from 2022 as it had been slightly crowded post covid due to high demand. The evening followed the established format, champagne reception, fine dinner, then the Chair's address from Rod Young. Our speaker, the football legend Kevin Keegan, focused on his

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The BTS Young Members' group continues to grow, particularly within the ITA YM and continued to embrace delivery of online lectures. They celebrated National Tunnelling Day/World Tunnel Day, further developing our international links, and held evening meeting and workshops through the year. They have focused on social media campaigns and events to continue to support the younger members of the tunnelling industry.

Work on numerous smaller tunnels also occurred through 2023 to facilitate the construction of the major projects like HS2 and the Lower Thames Crossing in the form of Micro Tunnelling to enable utility diversions. All of the utility companies are planning increased expenditure in their next AMP periods for the installation of new assets. This part of the industry will become a larger sector of the industry and its importance needs bringing to the fore.

I would like to thank the committee for all their support and effort during my year as Chair. The committee has remained active at all times in progressing the ambitions of the society and I am incredibly grateful for the positivity in approach, as well as all the spare time the committee members provide to make our society what it is. I am also incredibly grateful to our secretary, Katherine Coldwell, for all her support and work to keep the BTS running smoothly.

I finished my summary last year using my words from my "David Wallis Lecture 2022" – the UK Tunnelling Industry has A Past to Be Proud Off, A Future That Looks Green.

Well, nothing has changed, if anything it has got better, which will give our Society opportunities to significantly contribute to the Tunnelling workload in the years ahead.

3. BTS Objectives and Communications

Alastair Smith (Chair), Sarah Langley, Bethan Haig, Tim Smart, George Doulkas, Ken Spiby, Shani Wallis, Patrick Reynolds, Aya Hassan.

Communications activities in 2023 focused on preparing monthly adverts for Tunnels and Tunnelling International (T&TI) and improving engagement on the BTS social media platforms. Emails, both to individual and corporate members are the primary method of communication and the efforts by Katherine Coldwell are recognised and greatly appreciated by the society.

A revised contract with T&TI was agreed by the committee and runs for 5 years to June 2028 with a review in June 2026. The cost per magazine has increased from £3 to £4 to cover increased costs. The new contract includes two full page adverts per edition as well as supporting posts on the BTS LinkedIn page. The revised contract was approved in the September Committee meeting.

Adverts published monthly in Tunnels and Tunnelling International have continued to be part of the Communications strategy and have been focused each month on publicising upcoming events. The subcommittee appreciates the work by Divik Bandopadhyaya in preparing the adverts each month.

For the social media the BTS operated on the X (formerly Twitter), Facebook, LinkedIn and Wikipedia platforms with the BTYSM running accounts on Facebook, Twitter, LinkedIn and Instagram.

During this year, supported by Martin John from T&TI regular posting on the BTS LinkedIn page has been a key focus to enhance the wider engagement with the BTS via social media. This has seen a significant increase in followers and interest in posts. The BTS has also offered to BTS corporate members the opportunity to provide suitable posts for the site.

YouTube continues as the platform for delivery of the online evening lectures.

The number of followers/ subscribers on the different platforms are given below:

Platform	Year Created	Followers/ Subscribers *	Annual Increase in Followers δ
BTS Facebook	November 2020¡	380	95
BTS X (Twitter)	January 2014	1581	-3
BTS LinkedIn	December 2021	7001	6925
BTS YouTube †	January 2018	2410	880

* Total till 31 December 2023

δ Total followers gained between 1 January and 31 December 2023

¡ Created in 2009 but remained unused till 2020

† includes BTSYM lectures and associated subscribers

The BTS/NRM Working group have provided details and contacts for possible features in the Vision 2025 NRM redevelopment and expect to provide additional support as the redevelopment programme gains pace in 2024.

Thank you again to the Communications Sub-Committee members for efforts in 2023.

4. Finance and Membership

John Corcoran.

This year it was agreed to increase membership fees for 2024 by 5%, to reflect expected among other items, £25k investment in the BTS website, funding for the BTS at 50 book, an anticipated reduction in

profit for the D& Course, life-long free membership to all current and future James Clarke Medal Winners, and current 6.1% inflation (at time of June 23 meeting).

An agreement was signed between BTS and T&TI for 5 years from 1/1/24 (with a 3-year break clause) to increase the contribution from BTS to the magazine from £3 to £4 per month, to reflect cost of living increases. This includes two full page adverts for the BTS, and technical support of the BTS LinkedIn page.

Overall cash reserves increased to £428,656 by the end of 2023 compared to £460,083, with an improvement in Net Current Assets to £381,153 from £364,491 at the end of 2022. Within the reserve BTS hold funds on behalf of Think Deep UK which amount to £7,296. Publication in 2024 of the BTS at 50 book is expected to cost a total of £303k. £167k has been received in sponsorship. £93k has already been spent, leaving a predicted further spend of £210k. Income on book sales is estimated at £60k. It is felt that the legacy of the book remains an extremely worthwhile outlay for the members.

The Society agreed to support several projects during 2023: £6k to support Dr Andrew Colvin's dissertation into the causes of Bone Necrosis: £5k towards CIRIA report on chalk: £10.2k on the BTS Specification 4th edition publication.

Grade	UK	Overseas
Corporate Member Small (Up to 50 employees)	£451.50	£568.05
Corporate Member Medium (50 to 500 employees)	£719.25	£981.75
Corporate Member Large (More than 500 employees)	£1165.50	£1684.20
Individual	£85	£138
Retired	£32	£44
UK Student/Apprentice	£20	n/a
Young Member	£42	£53

Membership: The detail of the current membership (at the end of December 2023) is set out below:

	Member Classification	2023	2022	2021	2020	2019	2018	Change 2022/23
UK	Corporate members	79	78	84	88	82	75	
	Individual members (standard grade)	407	432	433	414	457	461	
	Students and Retired	66	84	68	69	67	76	
	Young Members	169	166	150	192	193	199	
	Total	**721**	**760**	**735**	**763**	**799**	**811**	
Overseas	Corporate members	6	7	7	8	8	8	
	Individual members	94	102	103	101	103	113	
	Students and Retired	7	7	7	5	6	7	
	Total	**107**	**116**	**117**	**114**	**117**	**128**	

5. Evening Meetings

Richard Sutherden (Chair), Divik Bandopadhyaya, John Greenhalgh.

Yet another year with a full calendar of high-quality presentations covering a wide range of topics which have been both well attended and well received. The Committee's and members' thanks go to all the presenters.

Attendance in 2023 showed a significant uptick post-COVID with some meetings well back to pre-COVID numbers with a maximum in person attendance of 205 with 448 online. This was in January on HS2 Area North .The consistent use of the ICE bar with sponsorship of both food and drink has certainly helped the numbers, as has the use of the Telford theatre for most meetings. We held our first joint meeting with the Concrete Society, facilitated by John Greenhalgh, which was a reprise and update of our March meeting. The Concrete Society provided the venue and the BTS provided the speakers.

Figure: BTS September Meeting

The programme of monthly BTS meetings through 2023 was as follows:

Date	Lecture Title & *Presenter (s)*	Venue/Platform	Attendance In person/online
19th Jan	A review of the tunnelling activities of HS2 'Area North'. BBV, Vinci Grands Projets. - Jules Arlaud, Guillaume Lefrere	Telford/YouTube	205/448
9th Feb	Kidston Pumped Storage Project, Queensland. Joint with MinSouth. Mott Macdonald Clare Onal	GMT/YouTube	90/200

23rd March	Geopolymer Concrete in Tunnelling. Wagners, OTB Concrete & HMJV – John Day, Charles Allen, Richard Sutherden	Telford/YouTube	140/277
13th April	Harding Prize. Jake Rankin – Murphy. Ricardo Manias – Riverlinx, Agustin Ruiz Lopez – Imperial College	Telford/YouTube	73/166
25th May	North Bristol Relief Sewer Project. Murphy – Dom Barlow, Adam Evenden	Telford/YouTube	112/ 24
15th June	Design of Watertight Structures- Can we rely on the self-healing of cracks in Concrete? COWI – Carola Edvardsen	Telford/YouTube	90/200
14th Sep	Lessons Learnt from the MSV (PSV) Fire at HS2 Chiltern Tunnels. Align JV – Neil Hancox, Shannon O'Keeffe	Telford/YouTube	142/not streamed
19th Oct	Highway 401 & 409 Rail Tunnel Project Toronto. Dr Sauer & Partners – Thomas Schwind, Dr Angelos Gakis, Strabag – Gerhard J. Urschitz	Telford/YouTube	105/technical issues/not streamed
2nd Nov	Geopolymer Concrete in Tunnelling and other applications. Joint with Concrete Society – OTB Concrete – Charles Allen, HMJV – Richard Sutherden	IStructE	29/53
16th Nov	20,000 mm under the sea. Connecting Tunnels under the Bristol Channel. Hinkley Point C – Balfour Beatty – Christoph Huber, James Long	GMT/YouTube	176/125
14th Dec	A Christmas Jamboree of Tunnelling – Silvertown Tunnel. Riverlinx CJV – David Baggs, Siva Brashanthan, Mikel Goirigolzarri Martinez, Mark Shepherd, Ivor Thomas, Christina Trigle.	Telford/YouTube	109/49

6. BTS Young Members

George Doulkas (Chair), Alasdair Fraser (Past Chair), Thomas Macgowan (Secretary), Ben Lafarga (Professional Development Sub-Chair), Sandeep Singh Nirmal (Schools & Universities Sub-Chair), Aya Hasan (Media & Socials Sub Chair), Arabel Vilas (BGA liaison).

The BTSYM Committee year 2022/23 (spanning November 2022 to November 2023) returned to full-time in person events following the pandemic. We saw increasing in person numbers including one lecture which was standing room only in the Godfrey Mitchell Theatre.

Lectures

During the course of the year, the BTSYM held a series of webinars and online workshops – as listed in Table 6-1.

Table 6-1 - List of BTSYM Lectures held between November 2022 and 2023

Date	Lecture Title & *Presenter(s)*	Venue/ Platform	Attendees In-person/online
16/02/2023	Vacuum waterproofing membrane system: advantages, features and case studies - *Enrico Pavese (Renesco)*	Godfrey/ YouTube	40/31
20/04/2023	London Underground Euston Station Enabling tunnels for HS2: Design and Construction innovations and challenges – *Ben Lafarga* (Mott MacDonald) & *Ben Hubble* (Mace Dragados JV)	Godfrey/ YouTube	112/60

8/06/2023	Road Tunnel Operation - *John Nicholas Tunnel Manager, National Highways*	Godfrey/ YouTube	18/20
21/09/2023	Special excavation design for complex anchor wall design	Godfrey/ YouTube	30/31
02/11/2023	BTSYM AGM & November lecture: Can tunnelling ever be sustainable? -	Godfrey/ YouTube	53/17

Despite the return to the in-person lectures, the committee observed lower than desired attendance at the lectures with only two sessions recording greater than 50% of the room capacity. The committee has recognised several contributing factors to this, mainly:

- Difficulty reaching all members to inform them of upcoming events, possibly by focusing on single communication channels like LinkedIn.
- Limited coordination between inter-referenced posts from BTS and BTSYM accounts
- Limited use of other social media such as Instagram and Facebook
- 'Home working' made it difficult to attract groups coming together after work and making marketing to corporate members less effective.
- Not achieved to establish "corporate" champions as discussed early in the 2022-2023 term.

To help improve marketing, the 2023 committee relaunched the mailing list on the Mailchimp platform which improves the visual impact of event marketing, allows individuals to self-register and provides analytics on the number of users actively reading emails.

Workshops

The 2023 Committee saw success in the in-person workshops, with most of them filling the room to its capacity. The possibility to broadcast the workshops was disregarded. It is thought that keeping the workshops in person only adds value to the membership.

The committee held a record of the workshop materials and as agreed with the workshop presenters, subsequently distributed this to its paid members (individual and corporate) but not to the non-member attendees. It's considered that this adds value to the membership fee.

BTSYM's outreach has been noteworthy, with workshops held with Engineers Ireland, Leeds University, sister ITAym groups and even industry leading names such as the software developer Bentley. The BTSYM also held one workshop at Imperial College.

Table 6-2 - List of BTSYM Workshops held between November 2022 and 2023

Date	Workshop title & *Presenter(s)*	Venue	Attendees In-person/online
2022-11-17	BTSYM how to get involved – meet and greet	ICE – Brassey Room	14
2022-12	Joint lecture - GTSYM (Greece)	online	Approx. 70
2023-01-19	Bekaert	ICE – Brassey Room	40/31
2023-02	Joint lecture - *AETOS YMs (Spain)*	On-line	50

2023-02-22	*Dublin Seminar*	Engineers Ireland	112/60
2023-03-23	*Sika Workshop*	ICE – Brassey Room	30
2023-05-25	*Low Carbon Sprayed concrete in SCL Construction*	ICE – Brassey Room	26
2023-06	Joint lecture - *J-YMA (Austria)*	online	Approx. 80
2023-07-07	*Python Plaxis – Joint BTS/BGA*	In-person at Imperial College / Online	30
2023-11-02	*Concrete injection*	ICE – Brassey Room	24

- The BGA Liaison introduced the inaugural Advanced Design Course in collaboration with the BGA ECG. This could be maintained. Imperial College provided the venue and Bentley the software.

Schools and Universities

The Schools and Universities sub-committee arranged numerous school visits and collaborated with educational and social organisations: TunnelSkills, Construction Youth Trust, and Think Deep Nigeria, enjoying a rich audience.
In detail, the S&U visited 4 schools and the 2-day mentoring programme led by the S&U Sub-chair and the BTSYM Chair 2023 attracted more than 120 students from Nigeria.

Media

- Strong representation of the BTSYM in the WTC2023 – Chair, Secretary and most of the sub-chairs were presenting, attending and contributed in the ITAym activities.
- Significant increase in our LinkedIn account, now ~ 6K followers.
- Significant increase in the YouTube account, now ~ 2.3K subscribers.
- Launch of the Mailchimp mailing list platform, now ~650 subscribers
- Significant attendance of new possible members at the 2022-2023 BTSYM socials.

Table 6-2: BTSYM Social Media Followers Statistics

Platform	Year Created	Followers*	Increase in Followers δ
BTSYM Facebook	September 2014	1000	+52
BTSYM Twitter	December 2011	1507	-28
BTSYM LinkedIn	January 2019	6000	+635
BTSYM Instagram	January 2016	470	-1
BTSYM Flickr	December 2023	0	0

* Total till 08 Feb 2024

δ Total followers gained between 1 January 2023 and 01 Feb 2024

Conference

On the 29th of September 90+ Young Tunnellers attended the BTSYM Annual conference, which comprised a day of lectures, discussions and Networking at the Arup's London office with the Keynote Speech given by Michael Devriendt (Associate Director, Arup) and a visit and closure note by Arnold Dix (ITA President). This conference would not have been possible without the conference sponsors. The conference costs, and the purchase of the merchandise were covered in full by the sponsorships – the BTSYM wish to give special thanks to the following organisations (Figure 6-1):

Figure 6-1: BTSYM Conference 2023 Sponsors

Figure 6-2: BTSYM Conference 2023 Attendees

Site visits & Socials

In addition to the workshops, lectures and presentations listed above, the BTSYM organised a number of social and networking events throughout the year. These included:

- Brunel Museum private tour and Social
- Social – Bank
- Canterbury Site visit

The Canterbury Site Visit was well received, with the attendance consisting of several graduates and apprentices who'd never previously visited a tunnel construction site.

Figure 6-23: BTSYM Site visit to HS2 Canterbry Road Vent Shaft and following social

Figure: BTSYM Social January 2023

Support to the main committee

In addition to the above events, the BTSYM continued to provide general IT support to the BTS committee by aiding online streaming and managing the BTS' YouTube channel as well as the management of content on the BTS Website.

International Tunnelling Day

International tunnelling day was muted this year, due to low levels of activity from the ITAym and due UK site visits which were cancelled at short notice due construction related issues at the host. The BTSYM committee has decided to take responsibility for planning the 2024 Tunnel Day to ensure that it isn't left as a last-minute activity for next year's incoming team.

7. Awards

Mike King (Chair), John Corcoran, Alastair Smith, Bethan Haig, John Kinnear.

Harding Prize 2023

There were 10 entries to the Harding Prize competition for 2023. At the final, the prize was awarded to Jake Rankin for his paper "Artificial intelligence for forecasting tunnelling progress". His award was presented at the BTS Dinner.

James Clark Medal 2023

The James Clark Medal winner for 2023 was Andy Alder. The award was made in recognition of his motivational, supportive and inspiring leadership within the tunnelling profession, and his contributions to major projects and the wider ICE.

James Clark Medal Winners Luncheon 2023

The James Clark Medal Winners Luncheon was held on 19 October 2023 at the ICE, and was attended by 40 past winners or their family representative, other past committee chairs and committee members.

Doug Allenby Award

The Doug Allenby Award was established in 2020 and the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory. No award was made in 2023 but an award will be made in 2024.

8. Education

Tim Smart (Chair), Mehdi Hosseini, Mike King, Divik Bandopadhyaya, Roger Bridge, Kate Cooksey, Christoph Eberle.

General

The BTS Sub-Committee Chair met with Susan Scurlock the CEO of Primary Engineer, an organisation that works with schools to encourage young people into engineering as a career. With support from Herrenknecht some material was provided to allow them to better articulate tunnelling and tunnel engineering. Going forward, working with the BTSYM there will be a plan to roll out the teaching pack.

MSc Course

The MSc Tunnelling and Underground space course was not run for the academic year 2022/2023 due to the impacts of COVID and the departure of Dr Alan Bloodworth from The University of Warwick. The BTS is liaising with other academic institutions to investigate whether there is a possibility of establishing an MSc course elsewhere.

MSc Course – BTS Bursary

The BTS did not award a bursary in 2023 due to the pause in the MSc Tunnelling and Underground Space at Warwick University.

9. Training and Courses

Rod Young (Chair), Mike King, Richard Sutherden, Tim Smart, John Greenhalgh, Russell Mason, George Doulkas.

BTS Tunnel Design and Construction Course

The 2023 course was held from 3rd July to 7th July at University of Warwick and was once again a successful event. A total of 80 delegates attended the course, 5 of whom were students sponsored by the BTS. Many thanks to all the presenters from industry that gave their time to help make the course a success.

The 2024 Course will be held at Warwick University on 1st to 5th July 2024, although there are limited residential places in 2024 because of work on the accommodation at the University.

Figure – BTS Tunnel Design & Construction Course 2023 at the University of Warwick

BTS Underground Health and Safety Course

The annual BTS Underground Health and Safety Course was held at the ICE on 21st & 22nd Nov at the ICE London, with 68 delegates attending. A great thanks to all the presenters from industry that gave their time to help make the course a success.

A review of the course content/structure was completed during 2023, overseen by John Corcoran, which was well received and a small review to assess the outcome of the 2023 course will be undertaken ready for 2024.

The 2024 Course will be held at the ICE in London on 18th and 19th November 2024.

Figure: BTS Underground Health & Safety Course 2023 at One Great George Street

Tunnel Survey Course

No Tunnel Survey Courses were arranged during 2023, a suitable location to hold the course has now been found and plans will progress for a course in 2024.

10. TunnelSkills

(Rod Young reporting).

ACHIEVEMENTS for 2023 using the TunnelSkills Values:-

1. **Growth – We identify and develop future training needs and improve the training provision infrastructure, while promoting the industry and the work of TunnelSkills**

In 2023, a TunnelSkills Working Group developed a new Training Standard and qualification for Overground Spoil Removal Conveyor Operations. The Standard and qualification have been developed, approved for CITB Grant, accepted by the Regulators and released to the Awarding Organisation in December 2023.

Throughout the year TunnelSkills promoted tunnelling specific training, qualifications and funding for these, demonstrated by a significant increase in uptake of the CITB grants by tunnelling employers. The City & Guilds 6151-02 Tunnel Entry and Emergency Procedures qualification, between 2018-2021, only two employers claimed a total of £17k, but since launching an active CITB/TunnelSkills campaign from early 2023, eleven employers have claimed over £430k in grants for this qualification.

2. Sustainability – We develop, maintain and promote a training and competence framework to sustain the industry for future generations

A key activity for TunnelSkills is the management and maintenance of National Occupational Standards (NOS) as these form the basis of many of the accredited tunnelling qualifications. The review and update of these standards was successfully completed by a team of several members of TunnelSkills in July 2023, supported by the CITB Standards Team. Also members supported a range of TSTS related

Working Groups in this redevelopment, supported by Site Safety Plus/CITB. The redevelopment activity is expected to be complete in the summer of 2024 and a rigorous testing and piloting phase will precede the launch later in 2024. TSTS continues to equip the tunnelling workforce with the essential training and knowledge required to work below ground, with over 700 achievements in 2023.

The new Multi Service Vehicle (MSV) CPCS qualification developed by TunnelSkills and released for delivery in 2022 continues to demonstrate competency and promote operational safety with over 28 achievements in 2023.

3. Innovation – We accelerate skills development to respond to new developments in an innovative way

In 2023, TunnelSkills worked with members Danny Sullivan Group to promote a new funded training offer - the ILM-accredited Leadership and Management course. Take up of this funded training offer has been limited, however, several members have continued to develop their own in-house supervisory development programmes, including Align JV and J. Murphy & Sons Ltd, and have shared their knowledge and experience with the wider TunnelSkills Forum.

TunnelSkills innovative Immersive Learning resources developed between 2019 and 2022, continue to benefit the industry and have been used to attract and inspire new talent into tunnelling at careers and employment events across the UK. In 2023, ten events hosted or attended by TunnelSkills and its members have been enhanced by these immersive resources

4. Inclusivity – We work with stakeholders to influence and improve the inclusivity of training, qualifications and access to the sector

Work experience placements are an invaluable tool benefiting potential new entrants to the industry and employers alike. TunnelSkills has supported member employers to provide a range of tunnelling-focused work experience placements across the UK totaling 32 across the year, of which nine have resulted in employment and/or apprenticeships.

The number of new tunnelling apprenticeship starts has exceeded targets this year with 24 new apprentices having commenced their learning programme.

11. Health and Safety and Standards

Donald Lamont.

2023 has again seen considerable activity on standards, guidance etc. The use of virtual meetings has maintained the increased frequency in European meetings due to the lack of travel involved.

British Standards

BS 6164:2019 – nothing to report.

CEN Standards

CEN/TC151/WG4 "Tunnel boring machinery – safety"

UK Delegation comprises Donald Lamont, Sean Martin, Steve Parker.

The revision process for ENs 16191/12110 continued throughout 2023. The provisional revised versions prEN 16191 along with prEN 12110-1 and prEN 12110-2 were published for CEN enquiry and around 430 comments were received. It was particularly noticeable the number of comments from France particularly as France had participated in the revision process. A number of comment resolution meetings were held and by the end of 2023. All comments on EN 12110-1 and EN 12110-2 were resolved. 9-month tolerance requests (extension of the drafting period) have been approved for all three standards.

Unsurprisingly, negative assessments of and comments on all three documents were also received from the CEN HAS Consultant. They still have to be resolved.

MSV standard – the first draft of the technical requirements for diesel engined MSVs was completed in 2023. The ZA Annex, table of hazards and verification table remain to be drafted. A second part dealing with battery powered MSVs is planned to follow.

CEN/TC196/WG2 "Mining"

UK Delegation comprises Donald Lamont, Clive Hannaford.

Revision of EN 1889-2 "Locomotives for mining and tunnelling" continued. This standard is being revised to address both diesel powered and battery powered locos. The revision of the technical requirements is around 75% complete.

Compressed Air Working Group

Chairman – Roy Slocombe.

The Compressed Air Working Group met twice during 2023. One meeting was devoted to Report 10 and the other to a demonstration of a self-administered Doppler monitoring system.

ITA/BTS CAWG Report 10 – the HPCA Guidelines.

The major revision of the guideline on high pressure compressed air, published jointly with the International Tunnelling Association, has gone for peer review within ITA and publication is expected in the first half of 2024. This document - ITA Report 10 - has now reached a level of maturity whereby future revision on a 5-year cycle should now be sufficient.

ITA/BTS CAWG Report 20 – the "Client guide to Report 10" has also been revised.

UHMS Paper - To draw the attention of the wider international hyperbaric medical and diving community to recent developments in tunnelling hyperbarics, a group of CAWG members have written a paper on "Advanced hyperbaric techniques in tunnelling" which has been accepted for publication in the journal of the prestigious Undersea Hyperbaric and Medical Society in the USA.

Other ITA Activity

Donald Lamont retired as Animateur of ITA WG5 after 22 years in post. He was awarded an ITA Distinguished Service Medal for his service. He was also awarded the ITACET Foundation Bronze Medal for 2023 for his contribution to health and safety training and education within ITA.

Report 14 – "Guideline on the provision of Refuge Chambers" – revision and updating of the ITA Report 14 on refuge chambers is continuing under UK leadership. This is partly necessitated by changes in chamber dimensions set out in prEN 16191 along with increased levels of remote control and automation being incorporated into chamber design.

Guideline on Human Factors – work restarted on this document during 2023.

BTS Guidance on Fatigue – Led by Dan Garbutt

Tunnel Industry Steering Group (TISG) Shift Fatigue Guidance Development

The TISG on shift fatigue guidance was established in November 2022 in acknowledgement of the lack of guidance that is focused on the sleepiness and heat stress impacts on fatigue of working underground and indeed any outdoor occupation.

The TISG is formed of primarily BTS members from across the spectrum, client, consultant, and contractors, both small and large diameter tunnellers as well as links to the health and safety and skills sector within tunnelling and academia. Its first effective meeting was in January 2023.

Objectives of the TISG - To understand the influence of and links between sleepiness, fatigue, the thermal environment, and human error proneness as they arise from current shift lengths and patterns and to produce tunnelling industry guidance on shift length and shift pattern with a view to improving

worker welfare and well-being along with reducing their error proneness through consideration of sleepiness, fatigue, and the thermal environment.

Outcome - To produce client lead guidance development on shift length and patterns with a view to improving worker welfare and well-being, along with reducing their error proneness through consideration of sleepiness, physical and cognitive fatigue, and the thermal environment. Positively impacting productivity and efficiency.

The TISG has already secured £25,000 in funding from the Nuclear Decommissioning Authority and the BTS has committed a sum of £10k to support development of the work. This is mainly through supporting the publication of the academic study that will underpin the guidance.

12. Technical Sub-Committee

Committee members: Mike King, Richard Sutherden, Daniel Garbutt, Bethan Haig (chair), John Kinnear, Jerome Furge.
Co-opted to main committee: Christoph Eberle (past chair), George Doulkas, Donald Lamont, Shani Wallis, Paul Perry, Sean Martin, Andrew Hindmarch.

Co-opted to technical sub-committee: Omar Mohammed, Benoit Jones, Charles Allen, Thomas MacGowan (BTSYM chair).

The Technical Sub committee has completed/is working on the following principal tasks:

- ***BTS Specification for Tunnelling 4th edition:*** The 4th edition of the Specification for Tunnelling was published in December 2024, after a period of final proofing and setting out. It has been made available for free public access; a model that will be considered for other publications.
- ***BTS SCL Best Practice guideline:*** This has been reviewed and contact has been made with Emerald publishing to see it published in 2024.
- **BTS Monitoring Underground Construction- A best practice Guide:** a sub-group (led by O Mohammed) has been established to update this document with advances in the field since last publication. Contact with Emerald made and proposal form drafted. Target publication early 2025.
- **BTS Segmental lining production control guidance:** a sub-group (led by J Kinnear) has been established to create a document that builds on ITA segmental guidance to address issues of QA/QC during segment production. To include gaskets. This will be a short pamphlet rather than full book.
- **BTSYM carbon calculations/how to guides:** Further to ITAtec sustainability sub-groups and the Pipejack Association carbon calculator it is proposed that the BTS prepare examples to aid the industry and allow bench-marking. BTS technical sub-commitee to provide guidance to the BTSYM who will lead this activity (under T MacGowan).

13. APPGI

Bill Grose (Chair); Rod Young, Kate Cooksey, Daniel Garbutt, Tim Smart, Bethan Haig.

The All-Party Parliamentary Group for Infrastructure (APPGI) is run jointly by the ICE and the BTS, having merged the BTS's APPG on Underground Space (APGUS) several years ago in order to focus Parliamentarians on fewer overlapping All-Party groups.

This enables BTS to concentrate on site visits and projects and initiatives of interest to its members and parliamentarians whilst leaving the administration of the Group and broader ICE policy aims to the institution's Public Affairs department to manage.

The stated aim of the group is to "highlight the importance of infrastructure, engineering and the use of underground space to the economy and society, and to hear from experts and discuss matters arising."

Moving the meetings from late afternoon to 8:30am in 2019 increased attendance from Parliamentarians and the meetings were held frequently enough to have gained some momentum.

Several meetings were held during 2023, but no site visits.

The people involved, and the activities of the last year, can be found at https://www.ice.org.uk/news-insight/policy-and-advocacy/all-party-parliamentary-group-on-infrastructure-appgi.

14. Website

Divik Bandopadhyaya (Chair) & Alasdair Fraser.

BTS Website

The updated BTS website (www.britishtunnelling.com) domain is renewed for another year, along with Zoho Corporation as the mail exchange provider.

The website domain remains in direct ownership of the BTS, along with britishtunnelling.org as a spare.

Please visit the website for further details.

Tunnels Database

Ken Spiby.

The tunnels database is still not available to Members or to the public. It has effectively been put on hold whilst the team concentrates on completing the 50th Anniversary book. However, as a part of research carried out for the book, the database has been substantially extended with both earlier and later projects. A substantial photo library has also been built up. Proposals for how best to use these for the benefit of our Members will be sought after the publication of the book.

15. 50th Anniversary

Book Working Group: Ken Spiby (Chair), Sarah Langley, John Corcoran, Anita Wu ; Ben Shiels; Divik Bandopadhyaya.

We have continued to work hard on the completion of the book: "Tunnelling Tales: Fifty years of the British Tunnelling Society". The table below compares progress at the of end of 2023 with progress at the end of 2020, 2021 and 2022:

	Progress end 2020	Progress end 2021	Progress end 2022	Progress end 2023
No of stories written (of total no anticipated)	173 (of 330)	381 (of 542)	502 (of 585)	562 (of 590)
% of stories written	53%	70%	86%	95%
Total no of authors		Almost 200	260	248
No of pages set (of total pages anticipated)	50 (of 776)	100 (of 866)	407 (of 866)	596 (of 880)
% of pages set (ie laid out in final format)	6%	12%	47%	74%
Chapters page set (of total chapters)	0 (of 17)	0 (of 18)	7 (of 16)	12 (of 16)

At the start of 2023 we believed that we were close to reaching a deal with ICE Publishing to print and sell the book, but ICE Publishing seemed to have stopped returning our calls. At the end of May 2023 we discovered why: the previous week, ICE Publishing had been sold to Emerald Publishing.

A 'for information' letter we received, assured us that we did "not need to do anything" and that Emerald "will be in touch". This remains the only communication that we received from Emerald (and from what remains of ICE Publishing) in 2023, as both continued to ignore our calls and emails.

We therefore have had a very late switch to 'self-publishing', seeking quotes for printing and for storage and distribution. This has inevitably delayed the printing and distribution of the book by several months. The programme for 2024 is therefore:

- January: modifications to the BTS website to handle book orders
- January: conclude negotiations with printers and distributors
- Early Feb: Agree the selling price of the book
- Mid Feb: Open the BTS website for book sales
- End May: Close sales
- Early June: Finalise the number of copies to be printed
- August: print (in Italy)
- September: distribute

In order to remove the risks to the BTS of over-ordering (paying for unsold copies) or under-ordering (paying a premium price for a small order and again for a reprint) we will be selling as 'pre-orders' only. Pre-orders must be ordered and paid for via the BTS website on or before 31st May 2024. We are planning a major advertising campaign for early in 2024 to ensure that this message is understood, and to encourage the buying of the book. The number of copies that we then order will be made up from: the number of pre-orders received; and our commitments to provide free copies (sponsors, organisations we wish to provide with copies, volunteers, etc). We will not be able to provide free copies to all (or indeed, to any) authors - there are simply too many).

16. T&T Editorial Advisory Board (EAB)

Mark Leggett (Chair), Ken Spiby, Kate Cooksey, Charles Allen, Divik Bhandopadhyaya, Roger Bridge, Rosa Diez, Mehdi Hosseini, Benoit Jones, Donald Lamont, David Terry, Ivor Thomas, Russel Mason, Ken Kwok.

The editorial meetings have been in person as well as virtual during 2023. The BTS Communications subcommittee and T&T have worked particularly well during the year to ensure the promotion of Tunnelling achievements and events both in the T&T publication and through T&T's LinkedIn page.

Mark Leggett (past chair BTS) undertook the Chair of the EAB for 2023. The BTS is very grateful to him for his work as Chair. We welcome back Eddie Woods as EAB Chair for 2024. The focus for 2024 will be to re-invigorate the EAB and further strengthen the relationship between the BTS and T&T.

17. International Tunnelling Association

Daniel Garbutt.

Member Nation Representative

This year the ITA Affairs Lead and Member Nation Representation role was taken up by Daniel Garbutt.

ITA Executive Council

Damian McGirr was successfully elected to the Executive Committee (Exco) of the ITA at the 48th General Assembly, meaning he would be unable to continue in the previous position as per the bylaws of the Association. Damian continues with the BTS committee co-opted as ITA Exco liaison.

ITA Executive Director

The ITA this year has also undergone change in its secretariat with the retirement of Olivier Vion as Executive Director who is replaced by Roland Herr as of July 2023. Olivier will remain to hand over and continue to support WTC2024 and the ITA-AITES 50th Anniversary celebrations in Shenzhen in April 2024.

The ITA notified the member nations in January 2024 that Roland Herr will step down from the position of Executive Director effective immediately with the function of the role being taken over by the Executive Committee until further notice.

World Tunnelling Congress and ITA General Assembly

The 49th General Assembly of the ITA-AITES was held at the World Tunnelling Congress in Athens, Greece. This general assembly was notable in that occurred a mere seven months after the previous in Copenhagen, Denmark. A special session was also held pre-congress in March 2023 to brief the member nations representatives on the changes being brought about by the change in leadership of the ITA and the Exco which are all relatively fresh in post.

During the 49th General Assembly significant changes to the membership and financial make-up of the ITA were proposed, no direct vote was taken at this point. An Extraordinary General Assembly that took place on the 26th September allowed member nations time to digest and feedback formally on proposals, this meant a vote could be taken on a sufficiently outlined plan. This involved several changes to the bylaws and a restructuring of the individual Affiliate Membership. These changes will enable the following:

- Create a new class of affiliate ITA client members to capture the interests and aspirations of client organisations while being sensitive to their peculiar probity and governance restrictions.
- Create a new class of affiliate individual ITA membership that would cater for those without a member nation organisation, and those wanting membership of the International ITA.
- Make access to ITA online information Free.
- Create regional promotion opportunities for ITA supporters and sponsors.
- Create ITA scope to expand its membership in countries without existing member organisations.
- Create easier access to ITA for young members.

Figure: (Left) ITA-AITES 2023 General Assembly; (Right) BTS Members attending WTC 2023 in Athens, Greece

BTS-ITA Affairs and Engagement Strategy

The BTS Committee through its ITA Affairs Sub-Committee has set about outlining its objectives and aims within the ITA. The BTS is currently working to provide consistency in its approach to engagement with the ITA to maintain and where appropriate enhance its influence within the

organisation. The primary aim is focused on maintaining the reputation for professional excellence of the BTS and its membership within the ITA.

The scientific and engineering community is not immune to changes in politics. As various member nations turbo charge their underground engineering sectors and develop their economies, their contribution and influence within the ITA increases. Other member nations that pull back on infrastructure spending may see their influence wane as their national project pipeline undergoes change.

As the UK's learned society for Tunnelling and Underground Space the BTS has the opportunity to advocate for the contributions and influence of its members within the ITA.

The strategy is focusing on the key areas which the BTS membership can significantly contribute to. It is acknowledged that given the size and nature of the sector within the UK not all technical areas within the ITA are representative of the BTS membership and the overall expertise. There are however areas that the BTS membership has significant experience within, and it is those that the BTS should support engagement in, with the ITA. Therefore, providing continued BTS influence in the development of global technical excellence.

ITA publications can be viewed at https://about.ita-aites.org/publications

Working Groups

- Working Group 2: Research
- Working Group 3: Contractual Practices
- Working Group 5: Health and Safety in Works
- Working Group 6: Maintenance and Repair
- Working Group 9: Seismic Effects
- Working Group 11: Immersed and Floating Tunnels
- Working Group 12: Sprayed Concrete Use
- Working Group 14: Mechanized Tunnelling
- Working Group 15: Underground and Environment
- Working Group 17: Long Tunnels at Great Depth
- Working Group 19: Conventional Tunnelling
- Working Group 20: Urban Problems, Underground Solutions
- Working Group 21: Life Cycle Asset Management
- Working Group 22 : Information Modelling in Tunnelling
- The ITAtech Low Carbon Linings Activity Group
- ITA Young Member Group
- ITA Sustainability Index SME Group

COMMITTEES

- ITACUS (Underground Space)
- ITA Tech (technical documentation)
- ITACET (Education and Training)
- ITACOSUF (Operational Safety of Underground Facilities)

18. Annual Dinner

John Scholey (Chair), John Corcoran, Divik Bandopadhyaya.

John Scholey (Chair), aided most ably by John Corcoran and Divik Bandopadhyaya.

Figure: (Left) Speech by BTS Chair at the 2023 Dinner; (Right) Kevin Keegan at the 2023 BTS Dinner

The Society's 33rd annual dinner was held at The Brewery banqueting centre in London on Friday 24th April 2023. This had been originally planned for Friday 5th May 2023. However, on 11th October 2022, our plans were thwarted by the announcement that the date of King Charles III's coronation would be May 6th! The consensus was that we should not try and hold the dinner on a coronation weekend, particularly as we reckoned hotel prices would sky-rocket and room availability would nosedive. Chair Rod Young asked that it be held in May, but the Brewery had no available Friday evenings in May; thus the 33rd Annual BTS Dinner was held on Friday 28th April, the only suitable date available.

The after-dinner speaker was footballer & manager Kevin Keegan who certainly held people's attention and remained in the Porter Tun to sign autographs, answer individuals' questions, etc.

The attendance was 670, which is not far above the contractual minimum of 625 attendees. This drop may in part be due to the rescheduled event falling on a bank holiday weekend. The organisers are also aware that numbers attending each dinner reflect the industry workload in terms of ongoing schemes and projects in planning.

Profits from the dinner go to support the BTS learned society activities. We are particularly grateful to Jacobs, our prime sponsor, whose support has enabled us to increase this contribution. At the May 2023 committee meeting, John Scholey stated that a sum of £7,772 was generated for society funds.

There was again a roving photographer; once again, those attending were given free access to download the resulting images.

19. Institution of Civil Engineers

Bill Grose.

The BTS continues to have a close relationship with ICE. As one of the largest and most active of the ICE's Associated Societies the BTS 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 encourages BTS to focus on technical projects and to seek funding assistance from the ICE Enabling Fund.

The ICE regularly refers tunnel-related media queries to BTS committee members and relies on our advice and expertise in such matters. These referrals have resulted in senior BTS members appearing on TV, on radio and reported in the national, local and technical press.

The BTS and the ICE continue to jointly run the All-Party Parliamentary Group for Infrastructure.

20. BGA Liaison

Paul Perry.

2023 has involved much liaison between BTS and the British Geotechnical Association with particular regard to numbers of attendees at Evening Meetings at the ICE, as well as content and the arranging of a joint meeting in 2024. Paul Perry, member of the BTS committee continues to attend the BGA committee meetings with regard to communication between the two groups, to ensure a varied range and good coordination on any over-lapping projects, such as Tideway and HS2. BGA are continuing with a BGA dinner at the ICE in the second half of the year to provide a leading lecture, dinner and "networking". This is in a similar style as the BTS dinner.

21. Reserves Policy

The Trustees policy for reserves is for there to be at least the equivalent of 12 months expenditure, this will ensure sufficient funds will be available to meet the needs of the Society. BTS reserves at the end of 2023 are £381,153.

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

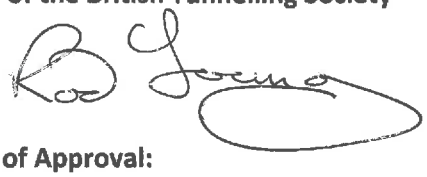
The trustees are required to prepare financial statements for each financial year which give a true and fair view of the state of affairs of the charity and the incoming resources and application of resources, including the net income or expenditure, of the Charity for the year. In preparing those financial 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 overleaf was approved by the Committee and was signed on its behalf by:

Mr Rod Young
Chair of the British Tunnelling Society



Date of Approval:

14th May 2026

22. Legal and Administrative Information

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, 17 May 2012 and 20 January 2022. The Society became a registered charity in March 1993. The Charity number is 1017887.

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

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.

23. 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 2023. The financial statements have been prepared on the accounting policies set out in 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. Ten members of the Committee are elected by electronic/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 Chair 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 Chair's term of office, they 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 and 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 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.
- 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 the above aims.

Administration of the Society

The business affairs of the Society are administered by a committee consisting of ten elected members, several co-opted and ex officio members together with a representative from the Institution of Civil Engineers, the British Geotechnical Association, the International Tunnelling and Underground Space Association, the Institute of Materials, Minerals and Mining and the Pipe Jacking Association.

The 2023 AGM saw vacancies arise in the Committee, due to the retirement of elected members. This year there were 4 elected member vacancies and 4 BTS members were appointed to serve from the 2023 AGM for a period of three years. They were: Bethan Haig, John Kinnear, Russell Mason and Ken Kwok.

In addition, the Committee requested that Donald Lamont, Shani Wallis, Ken Spiby, Roger Bridge, Patrick Reynolds and John Scholey continue their roles as co-opted members of the Committee, which they agreed to do and welcomed Alastair Smith remaining on the Committee this time as a co-opted rather than elected member. George Doulkas took on the responsibility of the Young Members' Chair in 2022, followed by Tom Macgowan in 2023. 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.

24. Report of the independent examiner

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 3 June 2024

BRITISH TUNNELLING SOCIETY
STATEMENT OF FINANCIAL ACTIVITIES
(INCLUDING INCOME AND EXPENDITURE ACCOUNT)
FOR THE YEAR ENDED 31 DECEMBER 2023

	2023 Unrestricted funds £	2023 Restricted funds £	2023 Total funds £	2022 Total funds £
INCOME FROM				
Donations:				
Doug Allenby	-	-	-	1,800
Charitable activities:				
Subscriptions	109,836	-	109,836	110,932
Income from other trading activities:				
Royalties & Sales	11,374	-	11,374	92
BTSYM Conference	1,145		1,145	4,902
Underground Health & Safety Course	-	-	-	6,855
BTS Course	86,160	-	86,160	119,310
Annual Dinner	98,643	-	98,643	106,395
Sposorship	7,170	-	7,170	250
Investments:				
Interest	2,660	-	2,660	601
Total Income	316,988	-	316,988	351,137
EXPENDITURE ON				
Charitable activities				
Postage	-	-	-	25
Meeting Expenses and secretarial	25,602	-	25,602	21,936
Subscriptions to other bodies	1,128	-	1,128	1,087
Other costs	2,724	-	2,724	1,730
Website	30	-	30	138
Award & Prizes	6,032	-	6,032	1,205
Grant	18,000	-	18,000	9,000
Professional fees	4,500	-	4,500	2,940
	58,016	-	58,016	38,061
Expenditure on raising funds				
Expenses re course and dinner	175,657	-	175,657	171,218
Publications	50,268	-	50,268	40,212
Underground Health & Safety Course	10,471	-	10,471	6,590
BTSYM Conference	4,124	-	4,124	4,176
Young Members Committee	1,658	-	1,658	746
BTS Conference	132	-	132	133
Bad Debt	-	-	-	43,920
	242,310	-	242,310	266,995
Total expenditure	300,326	-	300,326	305,056
Net income and net movement in funds	16,662	-	16,662	46,081
RECONCILIATION OF FUNDS				
Fund balances brought forward 1 January 2023	357,195	7,296	364,491	318,410
Fund balances carried forward at 31 December 2023	373,857	7,296	381,153	364,491

The statement of financial activity includes all gains and losses in the period.

All income and expenditure derives from continuing activities.

BRITISH TUNNELLING SOCIETY
BALANCE SHEET
AS AT 31 DECEMBER 2023

	Notes	2023 £	2022 £
CURRENT ASSETS			
Debtors	2	171,176	120,821
Short term deposits		62,598	62,585
Cash at bank		365,308	397,498
		599,082	580,904
CURRENT LIABILITIES			
Creditors: Amounts falling due within one year	3	217,929	216,413
NET CURRENT ASSETS		381,153	364,491
INCOME FUNDS			
Unrestricted	6	373,857	357,195
Restricted	6	7,296	7,296
		381,153	364,491

The notes on page 34 to 36 form part of these financial statements.

Approved by the committee on 14/5/26 and signed on its behalf by:

.....
Rod Young - Chair

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2023

Accounting Policies

Accounting Convention

The financial statements have been prepared in accordance with the Financial Reporting Standard 102 (effective January 2019) (FRS 102) and the requirements of the Statement of Recommended Practice (SORP) applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2019) (Charities SORP FRS 102).

The British Tunnelling Society meets the definition of a public benefit entity under FRS 102. Assets and liabilities are initially recognised at historical cost or transaction value unless otherwise stated in the relevant accounting policy note(s).

There are no material uncertainties about the charity's ability to continue, and so the going concern basis of accounting has been adopted.

Income

All subscriptions and investment income is accounted for when received, except in the case of subscriptions which are specifically stated to be in respect of an ensuing accounting period. No credit is taken for subscriptions unpaid at the balance sheet date.

Expenditure

Expenditure is recognised when there is a legal or constructive obligation to transfer resources to a third party, settlement is probable and the amount can be measured reliably. Expenditure is included within the Statement of Financial Activities on an accruals basis.

Fund Accounting

Unrestricted funds can be used in accordance with the charitable objectives of the Society, at the discretion of the Trustees. Restricted funds can only be used for the particular restricted purposes within the objectives of the Society.

Taxation

The charity is exempt from corporation tax on its charitable activity.

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2023

1 Member's subscriptions

The geographical analysis of subscriptions is as follows:

	2023	2022
	£	£
United Kingdom	92,449	92,236
Rest of the World	17,387	18,696
	109,836	110,932

2 Debtors

	2023	2022
	£	£
Debtors	11,297	-
Prepayments	144,136	112,083
ICE Intercompany	15,743	8,738
	171,176	120,821

3 Creditors

	2023	2022
	£	£
Purchase Ledger Control Account	10,765	10,480
Subscriptions in advance	30,258	27,313
Accruals	4,050	5,160
Other Creditors	6,556	7,160
Receipts in Advance	166,300	166,300
	217,929	216,413

Within the amount for other creditors BTS are holding £6,023 on behalf of Think Deep UK

4 Employees and Employment costs

The society does not employ staff directly.

5 Analysis of net assets between funds

	Unrestricted funds	Restricted funds	Total Funds
	£	£	£
Fund balances at 31 December 2023 are represented by:			
Current assets	591,786	7,296	599,082
Current liabilities falling due within one year	(217,929)	-	(217,929)
	373,857	7,296	381,153

6 Statement of movement in funds

	Unrestricted funds £	Restricted funds £	Total Funds £
Balance brought forward at 1 January 2023	357,195	7,296	364,491
Net movement in funds	16,662	-	16,662
Fund balances carried forward at 31 December 2023	373,857	7,296	381,153

7 Restricted Funds

The Doug Allenby Award was established in 2020, the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory.

8 Committee Members

Committee Members do not and never have received any remuneration.

	2023 £	2022 £
Travel and subsistence expenses reimbursed to committee members (n.b.3 trustees reimbursed in 2023, 3 in 2022)	1,524	1,507
	1,524	1,507

BRITISH TUNNELLING SOCIETY

England & Wales - Charity number 1017887

Accounts

British Tunnelling Society
Annual Report and Accounts 2022

James Clark Medal Winners lunch

Rod Young, BTS Chair
British Tunnelling Society
bts.chair@britishtunnelling.org.uk

Executive Summary

Ring Building on Thames Tideway West

Executive Summary

2022 was the year of bringing a period of normality back to the BTS and the industry, which was grabbed with great delight.

Many projects made significant milestone progress in 2022, including the preparation and launch, break through and turnaround of a number of TBMs for major projects such as HS2 and Silvertown, as well as key procurement announcements.

Our membership has seen a turnaround in some areas from 2021, Individual membership has not changed, the fall in young members has been reversed to a healthy increase, the same with students/retired members, but corporate membership fell. Also, overseas memberships were constant.

The year saw a full program of BTS and BTSYM evening lectures being held both in person at the ICE and online via our You-tube channel, although attendance numbers did not return to pre covid, we feel this was for several reasons: continuation of the covid working methods, the ICE Bar & the famous "BTS Sausage & Chips" being not available through 2022 due to staffing shortages and then the refurb. We have had a good range of topics at the evening events and sustained a high level of online viewing.

The full BTS program of events meant we were able to hold the Annual Dinner, demand for places was such that we had 807 diners at 78 tables. Crowded but everybody enjoyed the return to normality. The evening followed the established format, champagne reception, fine dinner, then the address from our Chair Ms Kate Cooksey. Our speaker, the television host Steph McGovern, focused

more on her recent career activities. Thanks were given to John Scholey for his years of organising the dinner, also to Divik Bandopadhyaya for the work he did to get the BTS through the virtual world of Covid.

Like other events, the Underground Design and Construction Course was once again held at Warwick University, and the Underground Health & Safety Course at the ICE, were able to take place, although numbers were lower than pre covid. Thanks to all the industry experts that prepared and presented.

Autumn 2022 brought the BTS Conference at the QEII Centre in Westminster, only a year from the 2021 event, or the 2020+1 as we called it. It will now return to its bi yearly slot. It was a great privilege for me to present the "David Wallis Lecture" - A Past to Be Proud Off, A Future That Looks Green.

The 2022 James Clark Medal was awarded to Ken Spiby and we presented his award at our November evening lecture. We held the Harding Prize, with the winner being Christopher Barrett for his paper "The planning and construction of mainline tunnel B connection tunnel".

The Doug Allenby Award was established in 2020 and the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory. The 1st award was made at the James Clark Medal Winner's Lunch on 20 October 2022 to Ignacio Tognaccini-Sainz.

The 4th edition of the Specification for Tunnelling was completed, the progress of the update was presented at the BTS conference in October 2022, scheduled for publication in late 2023.
The Health & Safety and Standards committee have worked on the British Standards, CEN Standards, Compressed Air Working and ITA Guidance, the documents are at various point of completion.

Plans for the 50th Anniversary Book continue, the number of photos, memories, stories, projects put forward has exceeded expectation, the book size has grown, the result being the publication will now be in 2023.

I would like to thank all the committee for all their support and effort during my year as Chair. I am incredibly grateful for the passion and enthusiasm of our individual, corporate and committee members and what has been achieved by their voluntary efforts.

As I used in my "David Wallis Lecture" – the UK Tunnelling Industry has A Past to Be Proud Off, A Future That Looks Green, which will give our Society opportunities to significantly contribution to that workload.

Rod Young
BTS Chair

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1. BTS Committee

Chair: Rod Young, Barhale Construction
Vice Chair: John Corcoran, BMB JV (Thames Tideway)
Immediate Past Chair: Kate Cooksey, Morgan Sindall

Elected Members and Trustees

Name	Company	Term	Responsibility
Sarah Langley	Sika Ltd	Retired 2022	Papers & Meetings
Chris Pressdee	Construction Industry Research and Information Association	Retired 2022	Education
Ignacio Castillo	Skanska	Retired 2022	Awards & Courses
Alastair Smith	Jacobs	Retires 2023	Communications
Christoph Eberle	Mott MacDonald	Retires 2023	Technical
Jérôme Furge	Bouygues Travaux Publics	Retires 2023	Conference
Mehdi Hosseini	London Bridge Associates	Retires 2023	Tunnelling Database
Richard Sutherden	J Murphy & Sons Limited	Retires 2024	Papers & Meetings
Mike King	MKTunnelling Limited	Retires 2024	Awards & Courses
Tim Smart	HS2 Ltd	Retires 2024	Education
Daniel Garbutt	Nuclear Decommissioning Authority	Retires 2025	
Divik Bandopadhyaya	London Bridge Associates	Retires 2025	Digital Delivery & Logistics, Website from February 2022.
John Greenhalgh	Nv Bekaert Sa	Retires 2025	

Co-opted Members:

Name	Company	Responsibility
Sarah Langley	Sika Ltd	50th anniversary celebrations
John Corcoran	BMB JV (Thames Tideway)	Annual Dinner
Ken Spiby	London Bridge Associates	50th anniversary celebrations
Eddie Woods	Consultant	T&TI Editorial Advisory Board – stepped down during 2022
John Scholey	Retired	Annual Dinner
Paul Perry	Hewson Consulting Engineers Ltd	BGA, PHEW Liaison
Alasdair Fraser	Atkins	Young Members Chair (From 4 November 2021), Website from April 2022
Shani Wallis	Journalist	Media Relations and Publishing
George Doulkas	Strabag UK Ltd	Young Members Chair (from 3 November 2022)
Damian McGirr	COWI UK Ltd	ITA Affairs

George Demetri	Compelo	Tunnels and Tunnelling magazine (until 19 May 2022)
Patrick Reynolds	Compelo	Tunnels and Tunnelling magazine (from 20 May 2022)
Roger Bridge	Balfour Beatty	Education, Think Deep
Anita Wu (til April 2022)	London Bridge Associates	Website

Institutional Representatives:

Name	Company	Responsibility
Andy Flowerday (til 17 November 2022)	Barhale	Pipe Jacking Association
Sean Martin (from 17 November 2022)	Murphy Group	Pipe Jacking Association
Bill Grose	Bill Grose Consulting	Institution of Civil Engineers, APPGI, ITIG
Andrew Hindmarch	Mott MacDonald Ltd	Institute of Materials, Minerals, and Mining
Donald Lamont	Hyperbaric & Tunnel Safety Ltd	Health and Safety, Technical

2. Chair's Report

2022 was a full year of normality after covid. For the tunnelling industry it saw the ramping up of delivery of major projects such as HS2, Silvertown and Lower Thames Crossing and the opening of Crossrail – "The Elizabeth Line".

The BTS in person events saw a full year's program completed, with the addition of the events continuing to go out on the BTS YouTube channel, a future permanent fixture.

We had the BTS Conference back at its correct year, myself presenting with great privilege the "David Wallis Lecture" which I titled - A Past to Be Proud Off, A Future That Looks Green.
It was great to see so many friends and colleagues coming together and catching up at such a fantastic event. It was also great to be joined by so many of our international colleagues including the new ITA President Arnold Dix of Australia who also presented at the event. The BTS are very grateful to Tunnelling Journal for managing such a fantastic event with the BTS.

I am incredibly thankful to all our speakers who continued to embrace the online experience as well as those that have given evening lectures in person. They have all given their time to come and present to us and share their knowledge and experience, with many having made an exceptional additional level of preparation to help make each of our events a success. The wide and varied selection of evening presentations not only showcases what our industry can do but it also continues to be a leading light in the knowledge sharing activities of the ICE and its Associated Societies.
It is fantastic to see people back at our in-person events but also that our online presence and lecture views is remaining high, this I feel is allowing the society to engage with a wider community.

The ICE bar and catering remaining closed we continued to walk around the corner to Westminster Arms as an alternative.

The BTYM have continued fostering links to other tunnelling groups around the world, these of course being done virtually, even taking account of the time zones.

Our membership has seen a turnaround in some areas from 2021, Individual membership has not changed, the fall in young member has reversed to a healthy increase, the same with students/retired members, but corporate membership fell. Also, overseas memberships was constant. The challenge ahead is to further grow our membership which we hope will be easier to achieve with combination of in person events and the new virtual arrangements that everybody is now more comfortable with.
We have also continued with our aim to provide information and guidance with our publications, evening meetings and training courses. The work on BTS Specification 4th Edition continues which should be ready for publication in early 2023. Our SCL Best Practice Guide will now be worked on now the 4th Edition is completed.

It gave me great delight this year to be able to host the Harding Prize after receiving a substantial number of entries. The prize was awarded to Christopher Barrett for his paper "The planning and construction of mainline tunnel B connection tunnel".
Plans for the 50th Anniversary Book continue at pace and a sample book chapter and example size book were made available to be viewed at the BTS Conference; it is rather overwhelming to see the amount of stories there are to be shared, this has resulted in its publication being delayed into 2023 to incorporate all the stories we have to share. The monthly pie chart updates have shown the amount of tasks that are need for its completion. Please ensure that you have a space ready on your coffee table.
The BTS Young Members' group continues to grow and continued to embrace delivery of online lectures. They celebrated National Tunnelling Day/ World Tunnel Day, further developing our international links. Holding evening meeting and workshops through the year.
They have focused on social media campaigns and events to continue to support the younger members of the tunnelling industry.
The James Clark Medal 2022 was awarded to Ken Spiby, the award was made in recognition of his services to the tunnelling industry through recording the past 50 years of activity of the BTS and the wider tunnelling industry in the "BTS at 50" book.

We had two James Clark Medal Winners luncheons 2022, (February and October) to make up for the cancellations in 2020 and 2021. It was great to see the return of some winners we had missed catching up with at past luncheons.
The Doug Allenby Award was established in 2020 and the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory. The 1st award was made at the James Clark Medal Winner's Lunch on 20 October 2022 to Ignacio Tognaccini-Sainz.

The Thames Tideway Project has its last machine in the ground and is progressing with secondary lining and civils structures. York Potash has been busy tunnelling and shaft sinking and several of the machines have successfully launched on the HS2 London to Birmingham route. The launch of the TBM for the Silvertown Tunnels occurred.

Work on numerous smaller tunnels also occurred, these both on the major projects like HS2, in the form of 1200m & 1500mm Micro Tunnelling to facilitate utility diversions, also for the UK Water, Gas and Electric organisations for the installation of new assets. Part of the industry that we should not forget about, a sector of the industry that needs bringing to the fore.

I would like to thank all the committee for all their support and effort during my year as Chair, the committee has remained active at all times in progressing the ambitions of the society and I am incredibly grateful for the positivity in approach, as well as all the spare time the committee

members provide to make our society what it is. I am also incredibly grateful to our secretary, Katherine Coldwell, for all her support and work to keep the BTS running smoothly.

3. BTS Objectives and Communications

Alastair Smith (Chair), Kate Cooksey, Jerome Furge, Mehdi Hosseini, Tim Smart, George Doulkas, Ken Spiby, Shani Wallis, Patrick Reynolds, Aya Hassan.

Communication in 2022 saw the January and February meetings continue online only with the lectures streamed live on YouTube. From March 2022 the lectures returned to hybrid in person with live streaming. The live streaming remained popular and preferred by many members partly due to concerns over Covid and the fact that the ICE bar and catering facilities remained closed for the duration of 2022.

Emails, both to individual and corporate members are the primary method of communication and the efforts by Katherine Coldwell are recognised and greatly appreciated by the society. For the social media the BTS operated on the Twitter, Facebook, LinkedIn and Wikipedia platforms with the BTYSM running accounts on Facebook, Twitter, LinkedIn and Instagram.

Adverts published monthly in Tunnels and Tunnelling International have continued to be part of the Communications strategy and have been focused each month on publicising upcoming events. The subcommittee appreciates the work by Divik Bandopadhyaya in preparing the adverts each month.

YouTube continues as the platform for delivery of the online evening lectures both for online only and hybrid, with the committee meetings both online only and hybrid facilitated using Microsoft Teams.

The number of followers/ subscribers on the different platforms are given below:

Platform	Year Created	Followers/ Subscribers *	Annual Increase in Followers δ
BTS Facebook	November 2020¡	350	65
BTS Twitter	January 2014	1604	20
BTS LinkedIn	December 2021	865	789
BTS YouTube †	January 2018	2084	554

* Total till 31 December 2022

δ Total followers gained between 1 January and 31 December 2022

¡ Created in 2009 but remained unused till 2020

† includes BTSYM lectures and associated subscribers

The Communications Sub Committee has established a storage platform for the countless images and photographs that have been collected for the 50th Anniversary Book.

Following a personal visit by Kate Cooksey to the National Railway Museum (NRM) in York an opportunity for enhancing some of the Tunnel related exhibits was tabled at the committee meeting in November 2021. The Communications Sub Committee subsequently reached out to the NRM to see if the BTS could provide any assistance. This proved opportune and positive and aligned with the NRM plan for a major redevelopment of the museum site as part of their Vision 2025 strategy. An initial meeting with the Museum Curator, Andrew McLean and BTS Committee members Rod Young and Alastair Smith was held at the museum on 2nd September 2022. Following this meeting a BTS / NRM working group was established to follow up on the collaboration opportunities both for the museum

and the option of holding regional events at the NRM in the future. The Working group is Alastair Smith, Rod Young, Kate Cooksey, Tim Smart and Aya Hasan.

Thank you again to the Communications Sub-Committee members for efforts in 2022.

4. Finance and Membership

This year it was agreed to retain the current individual membership fee for a further year, in reflection of the current economic climate and the cost-of-living challenges. A modest increase of 5% has been added for the corporate membership fees.

The membership fee for 2022 again included the provision of a hard copy and digital version of Tunnels and Tunnelling magazine. An agreement had been signed between BTS and T&TI for 5 years in 2020 (with a 3-year break clause) and a reduced contribution from BTS to the magazine. This provides stability and value for money for a significant period.

Grade	UK	Overseas
Corporate Member Small (Up to 50 employees)	£451.50	£568.05
Corporate Member Medium (50 to 500 employees)	£719.25	£981.75
Corporate Member Large (More than 500 employees)	£1165.50	£1684.20
Individual	£85	£138
Retired	£32	£44
UK Student/Apprentice	£20	n/a
Young Member	£42	£53

Membership: The detail of the current membership (at the end of December 2022) is set out below:

	Member Classification	2022	2021	2020	2019	2018	2017	Change 2021/22
UK	Corporate members	78	84	88	82	75	71	-6
	Individual members (standard grade)	432	433	414	457	461	446	-1
	Students and Retired	84	68	69	67	76	72	+16
	Young Members	166	150	192	193	199	191	+16
	Total	**760**	**735**	**763**	**799**	**811**	**780**	**+25**
Overseas	Corporate members	7	7	8	8	8	6	-
	Individual members	102	103	101	103	113	133	-1
	Students and Retired	7	7	5	6	7	8	-
	Total	**116**	**117**	**114**	**117**	**128**	**147**	**-1**

There has been an overall increase in UK membership of 3% (735 to 760), with overseas membership remaining almost stable.

Overall cash reserves have remained relatively stable at £460,083 (2021 - £465,584). It is expected that the majority of the BTS at 50 book costs will be spent in 2023 with a worst-case overall cost loss of £50,000. It is felt that the legacy of the book, even with this potential loss, remains an extremely worthwhile outlay for the members. Most of the sponsorship for the book has now been received and is included in the above figures. Net current assets increased from £318,410 to £364,491 at the end of 2022.

5. Evening Meetings

Richard Sutherden (Chair), Sarah Langley (Chair up to May 2022), John Greenhalgh, George Doulkas, Christoph Eberle

The year again has seen an almost full calendar of high-quality presentations covering a wide range of topics. The Committee's and members' thanks go to all the presenters. We postponed our planned September 2022 meeting out of respect to Queen Elizabeth II.

The start of the year saw us reverting to online meetings, but we soon managed to switch to in person meetings back in the Telford Theatre from March onwards with good in person numbers being achieved later in the year, particularly for the Harding Memorial Lecture. With the ICE bar remaining closed, post lecture refreshments were held at the Westminster Arms. Meetings have continued to be streamed live online via our YouTube channel with good viewing statistics.

The programme of monthly BTS meetings through 2022 was as follows:

Date	Lecture Title & *Presenter (s)*	Venue/Platform	Attendance In person/online
20/01	Small Steps Forward in Sustainable SCL, *Ross Dimmock*	Online only	0/200
10/02	Joint BTS/MinSouth lecture: Mining Opportunities in Afghanistan, Ismail Amin	Online only	0/unknown
17/03	Design & Construction of a cavern in downtown Los Angeles, *Carlos Herranz*	Telford & online	40/283
21/04	Harding Prize, *Christopher Barret (winner), Oliver Dzur, Zhengyao Mark AN*	Telford & online	70/158
19/05	AGM + HS2 Chiltern Tunnels A Brief Project Introduction & Progress Update from Align JV after 1 year of tunnelling, *James Reilly, Shannon O'Keefe*	Telford & online	90/270
16/06	Small diameter tunnel excavations & secondary lining construction methodologies at Thames Tideway Central, *Nuria Vazquez*	Telford & online	75/200
11/10	BTS/ICE Specification for Tunnelling 4th Edition, *Christoph Eberle*	QEII & recorded	unknown
17/11	Harding Memorial Lecture 2022, Why did that happen? Failures below ground, *Mike King*	Telford & online	120/220
08/12	Thames Tideway Update 2022, Jim Avant	Telford & online	100/157

6. BTS Young Members

Alasdair Fraser (Chair), Divik Bandopadhyaya (Past Chair), David Ashworth (Secretary), George Doulkas (Professional Development Sub-Chair), Ala Hammad (Schools & Universities Sub-Chair), Christy Lee (Media & Socials Sub Chair)

The BTSYM Committee year 2021/22 (spanning November 2021 to November 2022) continued to suffer the impact of the pandemic with reduced but increasing turnout of attendees to in person events throughout the year.

During the course of the year, the BTSYM held a series of webinars and online workshops – as listed in Table 6-1.

Table 6-1 - List of BTSYM Lectures & Workshop held between November 2021 and 2022

Date	Lecture Title & *Presenter(s)*	Venue/ Platform	Attendees
04 Nov 2021	BTSYM AGM & Lecture: Explaining Quality Engineering *Tiago Geraldes-Rodrigues (Balfour Beatty)*	Telford Theatre and YouTube	528[1]
17 Feb 2022	Validation of Probabilistic and Artificially Intelligent Ground Models in Predicting Soil Transitions *Rajat Gangrade (Arup)*	YouTube	466[1]
10 Mar 2022	BTSYM-BGAECG Ground Movement Assessment Workshop *Oasys*	MS Teams and YouTube	~60 attendees
17 Mar 2022	Blasting and Drilling Workshop *Mehdi Hosseini (London Bridge Associates)*	ICE[2]	6 attendees
07 Apr 2022	Flat or Domed? The selection of shaft base slab geometry and a medley of design considerations *Si Shen (TYPSA)*	Telford Theatre and YouTube	10 in person Attendees
29 Apr 2022	BTSYM/TAlym Webinar Tunnelling in Himalayas at 5000m altitude Sandeep Nirmal & Ahmed Shaz (RITES ltd.)	MS Teams and Youtube	40 Attendees
19 May 2022	Underground Construction Chemicals used in Tunnelling and Mining Workshop *Robin Swift (Normet)*	ICE[2]	8 Attendees
31 May 2022	Introducing CSM2020 – Discrete Event Simulation model for Predicting TBM Utilization *Dr Anuradha Ketwal (WSP USA)*	MS Teams[2]	50 Attendees
09 Jun 2022	Mumbai Metro, Sahar Road Crossover *Thomas Macgowan (Bedi Consulting) & Robin Swift (Normet)*	Telford Theatre and YouTube	25 Attendees
28 Jul 2022	University Presentation on Soft Ground Tunnelling *Martin knights (Martin Knights Consulting)*	MS Teams[2]	~100 Attendees
01 Sep 2022	Belgian Tunnelling Method and its Use in the Madrid Metro *David Sizer (AYESA) Claudio Diaz (AYESA)*	Godfrey Mitchell and YouTube	37 Attendees

1 Views on Youtube – Live attendee information on available

2 Recording Unavailable/Not Livestreamed

In addition to the workshops, lectures and presentations listed above, the BTSYM organised a number of social and networking events throughout the year which also saw the return of the BTSYM Conference for the first time since the start of the pandemic. On the 20th May 60+ Young Tunnellers attended a day of lectures, discussions and Networking at the ICE with the Keynote Speech given by Ivor Thomas. Here it was also announced that Ignacio Tognaccini-Sainz was to be awarded the inaugural Doug Allenby Memorial Medal.

Figure 6-1 : BTSYM Conference 2023 Attendees

On 8th March the BTSYM organised a very popular site visit to HS2 at the West Ruislip Portal Site. Here our Young Members were escorted around the TBM launch site and treated to a presentation by the contractor team. This was also followed by a social.

Figure 6-2: BTSYM Site visit to HS2 West Ruislup

In addition to the above events, the BTSYM continued to provide general IT support to the BTS committee by aiding online streaming and managing the BTS' YouTube channel as well as the management of content on the BTS Website. On the online front, the BTSYM's social media channels continued to witness reasonable growth over the year as depicted in Table 6-2.

Table 6-2 : BTSYM Social Media Followers Statistics

Platform	Year Created	Followers*	Increase in Followers δ
BTSYM Facebook	September 2014	948	139
BTSYM Twitter	December 2011	1535	25
BTSYM LinkedIn	January 2019	5365	1180
BTSYM Instagram	January 2016	471	50

* Total till 01 Feb 2023

δ Total followers gained between 1 January 2022 and 01 Feb 2023

Continuing with previous years, the BTSYM continued to support the International Tunnelling Society Young Members (ITAym), in the delivery of a 24-hour global Zoom Marathon on National Tunnelling Day/ World Tunnel Day (3td December 2020) – see Figure 6-2. As

described by ITAym, the marathon "was an incredibly successful global event with 30 countries involved and more than 3000 participants from all over the globe".

The BTSYM's 30-minute-long session at the marathon provided an update of its activities along with a general update of projects both in their delivery and planning stages within the UK. The recording of the UK slot is available to view on YouTube. Additionally, 2022 saw the BTSYM Past Chair successfully run for the ITAYM Committee at WTC 2022 which also was well attended by BTSYM members.

Figure 6-3 : BTSYM Social Media Followers Statistics

7. Awards

Mike King (Chair), Alastair Smith, John Corcoran

Harding Prize 2022

The Harding Prize for 2022 was awarded to Christopher Barrett for his paper "The planning and construction of mainline tunnel B connection tunnel"

James Clark Medal 2022

The James Clark Medal winner for 2022 was Ken Spiby. The award was made in recognition of his services to the tunnelling industry through recording the past 50 years of activity of the BTS and the wider tunnelling industry in the "BTS at 50" book.

James Clark Medal Winners Luncheon 2022

Two Luncheons were held in 2022 (February and October) to make up for the cancellations in 2020 and 2021.

Doug Allenby Award

The Doug Allenby Award was established in 2020 and the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory. The 1st award was made at the James Clark Medal Winner's Lunch on 20 October 2022 to Ignacio Tognaccini-Sainz.

8. Education

Tim Smart (Chair), Chris Pressdee (Past Chair), Mehdi Hosseini, Mike King, Tim Smart, Divik Bandopadhyaya, Mark Leggett, Roger Bridge, Kate Cooksey, Ivor Thomas, Christoph Eberle.

MSc Course

The MSc Tunnelling and Underground space course was not run for the academic year 2021/2022 due to the impacts of COVID and the departure of Dr Alan Bloodworth from The University of Warwick.

MSc Course – BTS Bursary

The BTS did not award a bursary in 2022 due to the pause in the MSc Tunnelling and Underground Space at Warwick University.

9. Training and Courses

Rod Young (Chair), Alastair Smith, Jerome Furge, Mehdi Hosseini, Richard Sutherden, Tim Smart, Divik Bandopadhyaya, John Greenhalgh; Alasdair Fraser.

BTS Tunnel Design and Construction Course

After the cancellation of the past 2 planned courses of 2020 & 2021, the twelfth Tunnel Design and Construction course was held at Warwick University in July 2022.
The 2022 course was held from 4th July to 8th July, and was once again a successful event, a total of 73 delegates, 5 of which were sponsored students attended the course. A great thanks to all the presenters from industry that gave their time to help make the course a success.

The 2023 Course will be held at Warwick University on 3rd - 7th July 2023.

BTS Underground Health and Safety Course

The annual BTS Underground Health and Safety Course was held at the ICE on 21st & 22nd Nov @ the ICE London, with 41 delegates attending. A great thanks to all the presenters from industry that gave their time to help make the course a success.

The 2023 Course will be held at the ICE in London on 20th and 21st November 2023. A review of the course content / structure is planned for during 2023 ready for the next course.

Online CPD Courses

No online courses were held during 2022, after being developed in the covid of 2021,but it will be looked at to be repeated in the future for continued members' development :- Introduction to Tunnelling, Health & Safety, Tunnel Design, Finite Element Analysis in Tunnelling.

Tunnel Survey Course

No Tunnel Survey Courses were arranged during 2022, a suitable location to hold the course is being sought.

10. TunnelSkills

(Rod Young reporting)

ACHIEVEMENTS for 2022:

Tunnelling NVQs, Assessor Training and Qualification

Ongoing priority to increase assessor capacity. The founding objective of TunnelSkills was to secure a fully qualified tunnelling workforce to a minimum of a level 2 vocational qualification.
Benefits include upskilling of workforce, flexibility of in-house assessors, ability to offer to clients.

Challenges include: the issue of freeing up the time – requires a commitment from the employer.
Access to the candidates to be assessed is also an issue.
TunnelSkills has supported the qualification of 9 Assessors to date.
3 new trainee assessors starting Spring 2023.

Level 2 Tunnelling Operative Apprenticeship

Successful qualification of the Align / TG Tunnelling apprentices in February 2023.
The training provider of the programme – worked well due to client, contractor and subcontractor working together to ensure apprentices supported within teams and 'rotated' to gain full experience.
Two new cohorts planned for 2023 – one to start April in London, and one later in West Midlands.
Support from main contractors is key to success of these programmes.
TunnelSkills has a key role to play in supporting identified champions in major projects.
Neil Jones of Institute for Apprenticeships and Technical Education (IfATE) has advised a review of the Apprenticeship Standard will take place in 2023, including funding rates for formal training, and has requested the support of TunnelSkills in this review.

TunnelSkills Immersive Learning Project

Project successfully completed in January 2023. GTO thanked TunnelSkills members who had supported with the evaluation. The VR resources will continue to be used. Any members who wish to borrow a VR headset please contact fto@tunnelskills.org

Tunnelling Safety Training Scheme (TSTS)

TunnelSkills Working Group surveyed members and developed recommendations and outline plan to Site Safety Plus. SSP and CITB will present to the Management Committee, the process will take up to 18 months.

Multi Service Vehicle (MSV) CPCS category A51 qualification

The new qualification, developed by TunnelSkills members and approved for CITB grant claims from February 2022, has been a big success - 76 MSV qualifications delivered to date. Around 12% did not pass the theory test.

National Occupational Standards (NOS) in Tunnelling Operations

These standards require a formal and highly regulated review – TunnelSkills offered to support. A Working Group led by TunnelSkills is working on the reviews.

11. Health and Safety and Standards

Donald Lamont

2022 has seen considerable activity on standards, guidance etc. The increased use of virtual meetings has led to an increased frequency in European meetings due to the lack of travel involved.

British Standards

BS 6164:2019 – towards the end of 2022 two major fire incidents on UK tunnels led to criticism that in both cases, BS 6164:2019 did not provide sufficiently firm recommendations on the specific circumstance of the incidents.

CEN Standards

CEN/TC151/WG4 - UK delegation comprised Donald Lamont, Steve Parker, Sean Martin.

prEN 16191:2023 – the technical revision of the text of EN 16191:2014 was completed in 2022 and following formal editing and translation, the prEN should be released for CEN enquiry early in 2023.

prEN 12110:2023 – the technical revision of the text of EN 12110:2014 along with the drafting of a new Part 2 to the standard was completed in 2022 and following formal editing and translation, the prEN should be released for CEN enquiry early in 2023.

MSV standard – work continued on drafting a CEN standard for MSVs.

CEN/TC196/WG2 – UK delegation comprised Donald Lamont, Clive Hannaford.

EN 1889-2 – "Machines for underground mines - Mobile machines working underground - Safety - Part 2: Rail locomotives". A revision of this standard began in 2022. Its scope has been extended to specifically include "tunnelling" applications hence the BTS involvement representing BSI.

Compressed Air Working Group

Chairman – Roy Slocombe

CAWG met twice during 2022. It discussed the physiological problems – potential for isobaric counterdiffusion - around switching between breathing a helium rich mixture when immersed in air e.g. in the excavation chamber, and breathing the same mixture when immersed in the mixture e.g. in the TUP shuttle or habitat. It was agreed there were no concerns over this activity. It also discussed harmonising European requirements over medical examinations between the tunnelling sector and diving. CAWG has begun active participation in the periodic revision of the ITA/BTS CAWG Reports 10 and 20 relating to high pressure compressed air work.

ITA Guidance

Donald Lamont - Animateur and BTS representative to WG5

ITA WG5 "H&S in Works" agreed at its meeting in September 2022 in Copenhagen to revise its Reports 10 and 20 on HPCA work, to revise its Report 14 on refuge chambers and to continue drafting its guidance on human factors.

12. Technical Sub-Committee

Christoph Eberle, Mike King, Mehdi Hosseini, Jerome Furge, Richard Sutherden, Daniel Garbutt, George Doulkas, Donald Lamont, Shani Wallis, Paul Perry, Sean Martin, Andrew Hindmarch

The Technical Sub committee is working on the following principal tasks which are summarised below:

a. ***BTS Specification for Tunnelling 4th edition***

The drafting of the 4th edition of the Specification for Tunnelling was completed in July 2022. Over the summer, the specification was peer reviewed by key stakeholders of the UK tunnelling community. The progress of the update was presented at the BTS conference in October 2022, where the second round of peer reviews was announced. At the time of writing this final round has been completed and the results are now incorporated into a final draft, scheduled for publication in late 2023.
The BTS Committee has confirmed a strong preference for free public access to the 4th edition. Commercial negotiations with ICE publishing are now being held to establish the terms under which this can be facilitated.

b. ***BTS SCL Best Practice guideline***

This document has now been reviewed and is awaiting final drafting and final proof reading. The TSC has prioritised finalisation of the 4th edition over progressing this document which is now also scheduled to be issued in 2023.

13. APPGI

Bill Grose (Chair); Kate Cooksey; Mark Leggett; Ivor Thomas, Tim Smart, Jerome Furge.

The All-Party Parliamentary Group for Infrastructure (APPGI) is run jointly by the ICE and the BTS, having merged the BTS's APPG on Underground Space (APGUS) several years ago in order to focus Parliamentarians on fewer overlapping All-Party groups.

This enables BTS to concentrate on site visits and projects and initiatives of interest to its members and parliamentarians whilst leaving the administration of the Group and broader ICE policy aims to the institution's Public Affairs department to manage.

The stated aim of the group is to "highlight the importance of infrastructure, engineering and the use of underground space to the economy and society, and to hear from experts and discuss matters arising."

Moving the meetings from late afternoon to 8:30am in 2019 increased attendance from Parliamentarians and the meetings were held frequently enough to have gained some momentum.

Several meetings were held during the 2021/22 session, but no site visits. A site visit to HS2 is planned for the next year.

14. Website

Divik Bandopadhyaya and Alasdair Fraser (Joint Chair), Anita Wu (Past Chair), Ken Spiby, Alastair Smith, Shani Wallis.

BTS Website

The updated BTS website (www.britishtunnelling.com) was launched in February 2021, with the domain switching from .org.uk to .com. Likewise the BTS email addresses changed to the domain, with Zoho Corporation as the mail exchange provider.

In the last year, the website domain also transferred into direct ownership of the BTS, as opposed to being held by the website developer.

Please visit the website for further details.

Evening meetings, conferences, training courses and news are regularly updated with archive meetings available to watch online https://britishtunnelling.com/events/evening-meetings-archive.

Information on BTS publications and a suggested reading list are under the knowledge section of the website. The content for sustainability has also been expanded https://britishtunnelling.com/knowledge/sustainability.

The website content has continued to expand for Transforming Tunnel Safety (TTS) https://britishtunnelling.com/tts/transforming-tunnel-safety to encourage knowledge sharing of lessons learnt, best practice guidance and safety videos on tunnelling projects.

Tunnels Database

Mehdi Hosseini (Chair), Ken Spiby

The tunnels database is still not available to Members or to the public. It has not been possible to get the necessary controlled access to work reliably with the current database structure.

Further work on the database was stopped pending the completion of the new BTS website. Three meetings were held in 2021 and further testing carried out. Following further testing, it is intended that a recommendation be made either to modify or re-build.

This has effectively been put on hold whilst the team concentrates on completing the 50th Anniversary book. However, as a part of research carried out for the book, the database has been substantially extended with both earlier and later projects. A substantial photo library has also been built up.

Proposals for how best to use these for the benefit of our Members will be sought after the publication of the book.

15. 50th Anniversary

Book Working Group: Ken Spiby (Chair), Sarah Langley, John Corcoran, Anita Wu (maternity leave); Ben Shiels.

The BTS celebrated its 50th Anniversary in March 2021, but the Covid pandemic meant that this was a much more muted celebration than had been hoped.

A book: "Tunnelling Tales: Fifty years of the British Tunnelling Society" is under production, but we were unable to complete this in time to publish in 2021 for the actual anniversary, or even in 2022. It is very much hoped that we can publish in 2023. This will mean that the book will be 2 to 2.5 years late. The main reasons for this are:

- The book has proven to be much more popular than anticipated and will be around 4 times the size of the original proposal
- The volunteers in the main, have full-time day jobs and can only commit a limited amount of time to the book
- None of the volunteers has published a book before, and all severely underestimated both the number of steps required, and the time required to complete each task.

The table below compares progress at the of end of 2022 with progress at the end of 2020 and 2021:

	Progress end 2020	**Progress end 2021**	**Progress end 2022**
No of stories written (of total no anticipated)	173 (of 330)	381 (of 542)	502 (of 585)
% of stories written	53%	70%	86%
Total no of authors		Almost 200	260
No of pages set (of total pages anticipated)	50 (of 776)	100 (of 866)	407 (of 866)
% of pages set (ie laid out in final format)	6%	12%	47%
Chapters page set (of total chapters)	0 (of 17)	0 (of 18)	7 (of 16)

- We are in negotiations with ICE Publishing and others to agree costs for printing and distribution. This will then fix the timetable, but we hope that we can print in time for an October 2023 launch. We will fix the price and open for pre-orders as soon as we have concluded a contract with a printer. Strong pre-orders will give confidence for a larger print run, resulting in savings per copy.

16. T&T Editorial Advisory Board (EAB)

Eddie Woods (Chair), Ken Spiby, Kate Cooksey, Charles Allen, Divik Bhandopadhyaya, Roger Bridge, Rosa Diez, Mehdi Hosseini, Benoit Jones, Donald Lamont, Andrew Smith, David Terry, Ivor Thomas.

2022 continued where 2021 left off. All the editorial meetings have been virtual.

George Demetri has stepped down as Editor and has now been replaced by Patrick Reynolds.

Eddie Woods stepped down during 2022 as the chair of the EAB and there was a hiatus in the latter part of 2022 whilst a replacement for Eddie was sought. Mark Leggett (past chair BTS) has taken on the Chair of the EAB from January 2023. The BTS is very grateful to Eddie Woods for his work as Chair, particularly during the COVID pandemic.

The focus for 2023 will be to re-invigorate the EAB and strengthen the relationship between the BTS and T&TI.

17. International Tunnelling Association

Damian McGirr

The WTC was hosted in Copenhagen in September 2022.

Damian McGirr was elected to the Executive Council at the General Assembly in 2022 along with 5 other ExCo members Klaus Rieker (Germany), Andrea Pigorini (Italy), Sanya Zlatanic (USA), Monika Mitew-Czajewska (Poland); Sindre Log (Norway.

Arnold Dix of Australia was elected as the new President taking over from Jenny Yan.

Jamal Rostami (Iran), Andres Marulanda Escobar (Columbia) and Hangseok Choi (Korea) were elected to Vice Presidents. 1 place remained unfilled following the elections.

All of the above will serve a 3 year term.

At the General Assembly in Copenhagen the output from the organisational review undertaken by an external consultant was presented to the Member Nations and the new ExCo has now been tasked with the implementation of the recommendations from this report.

ITA publications can be viewed at https://about.ita-aites.org/publications

Working Groups

- Working Group 2: Research
- Working Group 3: Contractual Practices
- Working Group 5: Health and Safety in Works
- Working Group 6: Maintenance and Repair
- Working Group 9: Seismic Effects
- Working Group 11: Immersed and Floating Tunnels
- Working Group 12: Sprayed Concrete Use
- Working Group 14: Mechanized Tunnelling
- Working Group 15: Underground and Environment
- Working Group 17: Long Tunnels at Great Depth
- Working Group 19: Conventional Tunnelling
- Working Group 20: Urban Problems, Underground Solutions
- Working Group 21: Life Cycle Asset Management
- Working Group 22 : Information Modelling in Tunnelling
- The ITAtech Low Carbon Linings Activity Group
- ITA Young Member Group
- ITA Sustainability Index SME Group

COMMITTEES

- ITACUS (Underground Space)
- ITA Tech (technical documentation)
- ITACET (Education and Training)

- ITACOSUF (Operational Safety of Underground Facilities)

18. Annual Dinner

John Scholey (Chair), John Corcoran, Divik Bandopadhyaya

The Society's 32nd annual dinner was held at The Brewery banqueting centre in London on Friday 6th May 2022. This was the first dinner after a two year break owing to the Covid pandemic. As Lockdown hit after a considerable number of bookings had been taken for the 2020 dinner, we offered a free bottle of wine to every table that stood by their 2020 booking. A total of 35 bottles of 'farewell to lockdown' wine was provided to reward those members that retained their 2019 bookings to thank those members.

Demand for places was such that we were unable to keep to our target of 75 tables, accommodating 807 diners at 78 tables, of which 26 were tables of 11 people. This did make the room feel a little crowded in places. For the 2023 dinner, we will not exceed 75 tables of 10 people.

The evening followed the established format and was thus preceded by a champagne reception. After the usual fine dinner, we were treated to a rousing address from the Chair Ms Kate Cooksey; this was her second year as BTS Chair, but due to the hiatus of the pandemic, her first dinner in that role. The theme of women in engineering was maintained by our speaker, the television host Steph McGovern, although her address focused more on her recent career activities. On conclusion she acceded to a request from MC John Scholey to a brief display of Irish step dancing to the reel 'Mountain Road' to some great acclaim.

Profits from the dinner go to support the BTS learned society activities. We are particularly grateful to Jacobs, our prime sponsor, whose support has enabled us to increase this contribution.
There was again a roving photographer; this year, those attending were given free access to download the resulting images.

19. Institution of Civil Engineers

Bill Grose

The BTS continues to have a close relationship with ICE. As one of the largest and most active of the ICE's Associated Societies the BTS 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.

A change in the financing arrangements in 2018 encouraged us to focus more on technical projects and to seek funding assistance from the ICE Enabling Fund, and this is still the case.

The ICE regularly refers tunnel-related media queries to BTS committee members and relies on our advice and expertise in such matters. These referrals have resulted in senior BTS members appearing on TV, on radio and reported in the national, local and technical press.

The BTS and the ICE continue to jointly run the All-Party Parliamentary Group for Infrastructure.

20. BGA Liaison

Paul Perry

This past year has involved much liaison between BTS and the British Geotechnical Association picking up on Evening Meetings, content and attendance, as well as input to the Tunnel Asset Management Report being progressed by CIRIA. Paul Perry, member of the BTS Committee, attends the BGA committee meetings with regard to communication between the two committees and discussions on future evening meetings, to ensure a varied range and good coordination on any over-lapping projects, making for interesting presentations for attendees. This year, the BGA introduced a BGA

Dinner at the ICE in October, which was introduced to assist with "networking", with the intention of making this an annual event, growing in popularity and numbers, year by year, in a similar style as to the annual BTS Dinner. This year also saw Kate Beardsley, Specialist Knowledge Societies Executive take over from Shelagh Fleming (following her retirement) in managing ICE's support to the BGA Committee activity.

21. Reserves Policy

The Trustees policy for reserves is for there to be at least the equivalent of 12 months expenditure, this will ensure sufficient funds will be available to meet the needs of the Society. BTS reserves at the end of 2022 are £364,491 (2021 - £318,410).

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.

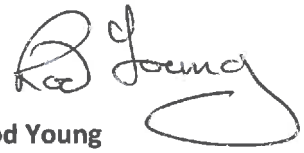
Trustees' responsibilities for the financial statements

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; and
- 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 overleaf was approved by the Committee and was signed on its behalf by:



Mr Rod Young
Chair of the British Tunnelling Society

19th Sept 2024.

Date of Approval:

22. Legal and Administrative Information

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.

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	CCLA Investment Management Limited
Strand Branch	St. Alphage House
PO Box 414	2 Fore Street
38 Strand	London
London WC2H 5JB	EC2Y 5AQ

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.

23. 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 2022. The financial statements have been prepared on the accounting policies set out in 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 January 2019.

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. Ten members of the Committee are elected by electronic/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 Chair 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 Chair's term of office, they 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 and 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 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;
- 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; and
- Does all such other things as are incidental or conducive to the attainment of any or all the above aims.

Administration of the Society

The business affairs of the Society are administered by a committee consisting of ten elected members, several co-opted and ex officio members together with a representative from the Institution of Civil Engineers, the British Geotechnical Association, the International Tunnelling and Underground Space Association, the Institute of Materials, Minerals and Mining and the Pipe Jacking Association.

The 2022 AGM saw vacancies arise in the Committee, due to the retirement of elected members. This year there were 3 elected member vacancies and 3 BTS members were appointed to serve from the 2022 AGM for a period of three years. They were: Daniel Garbutt, John Greenhalgh and Divik Bandopadhyaya.

In addition, the Committee requested that Eddie Woods, Donald Lamont, Shani Wallis, Ken Spiby, Roger Bridge, Patrick Reynolds and John Scholey continue their roles as co-opted members of the Committee, which they agreed to do and welcomed Sarah Langley remaining on the Committee this time as a co-opted rather than elected member. Alasdair Fraser took on the responsibility of the Young Members' Chair in 2021, followed by George Doulkas in 2022. 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.

24. Report of the independent examiner

I report to the trustees on my examination of the accounts of the British Tunnelling Society ('the association') for the year ended 31 December 2022.

Responsibilities and basis of report

As the Trustees of the Association (and also its directors for the purposes of company law) you are responsible for the preparation of the accounts in accordance with the requirements of the Charities Act 2011.

I report in respect of my examination of the charity's accounts carried out under section 145 of the Charities Act 2011 and in carrying out my examination I have followed the Directions given by the Charity Commission under section 145(5)(b) of the Charities Act 2011.

Independent examiner's statement

I have completed my examination. I confirm that no material matters have come to my attention in connection with the examination giving me cause to believe:

1. accounting records were not kept in respect of the Association as required by section 130 of the Act; or
2. the accounts do not accord with those records; or
3. the accounts do not comply with the applicable requirements concerning the form and content of accounts set out in the Charities (Accounts and Reports) Regulations 2008 other than any requirement that the accounts give a 'true and fair view which is not a matter considered as part of an independent examination.

I have no concerns and have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Jonathan Healey FCA
Lindeyer Francis Ferguson Limited
Chartered Accountants
North House
198 High Street,
Tonbridge, Kent
TN9 1BE

Date 7 October 2023

BRITISH TUNNELLING SOCIETY
STATEMENT OF FINANCIAL ACTIVITIES
(INCLUDING INCOME AND EXPENDITURE ACCOUNT)
FOR THE YEAR ENDED 31 DECEMBER 2022

	2022 Unrestricted funds £	2022 Restricted funds £	2022 Total funds £	2021 Total funds £
INCOME FROM				
Donations:				
Doug Allenby	-	1,800	1,800	
Charitable activities:				
Subscriptions	110,932	-	110,932	110,122
Income from other trading activities:				-
BTS CPD Courses	-	-	-	24,800
Royalties & Sales	92	-	92	275
BTSYM Conference	4,902	-	4,902	
Underground Health & Safety Course	6,855	-	6,855	10,810
BTS Course	119,310	-	119,310	-
Annual Dinner	106,395	-	106,395	-
Sponsorship	250	-	250	-
Investments:				
Interest	601	-	601	7
Total Income	349,337	1,800	349,337	146,014
EXPENDITURE ON				
Charitable activities				
Postage	25	-	25	5
Meeting Expenses and secretarial	21,936	-	21,936	15,170
Subscriptions to other bodies	1,087	-	1,087	1,155
Other costs	1,730	-	1,730	1,296
Publications	-	-	-	6,000
Website	138	-	138	854
Award & Prizes	1,205	-	1,205	6,285
Grant	9,000	-	9,000	6,000
Sundry Expenses	-	-	-	500
Professional fees	2,940	-	2,940	4,202
	38,061	-	38,061	41,467
Expenditure on raising funds				
Expenses re course and dinner	171,218	-	171,218	29
Publications	40,212	-	40,212	41,904
Underground Health & Safety Course	6,590	-	6,590	9,219
BTSYM Conference	4,176	-	4,176	-
Young Members Committee	746	-	746	309
BTS CPD Courses	-	-	-	1,744
BTS Conference	133	-	133	3,600
Bad Debt	43,920	-	43,920	20,960
	266,995	-	266,995	77,765
Total expenditure	305,056	-	305,056	119,232
Net income and net movement in funds	44,281	1,800	44,281	26,782
RECONCILIATION OF FUNDS				
Fund balances brought forward 1 January 2022	312,914	5,496	318,410	291,628
Fund balances carried forward at 31 December 2022	357,195	7,296	364,491	318,410

The statement of financial activity includes all gains and losses in the period.

All income and expenditure derives from continuing activities.

BRITISH TUNNELLING SOCIETY
BALANCE SHEET
AS AT 31 DECEMBER 2022

	Notes	2022 £	2021 £
CURRENT ASSETS			
Debtors	2	120,821	146,306
Short term deposits		62,585	62,583
Cash at bank		397,498	403,001
		580,904	611,890
CURRENT LIABILITIES			
Creditors: Amounts falling due within one year	3	216,413	293,480
NET CURRENT ASSETS		364,491	318,410
INCOME FUNDS			
Unrestricted	6	357,195	312,914
Restricted	6	7,296	5,496
		364,491	318,410

The notes on page 29 to 31 form part of these financial statements.

Approved by the committee on 19/9/24 and signed on its behalf by:

Rod Young - Chair

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2022

Accounting Policies

Accounting Convention

The financial statements have been prepared in accordance with the Financial Reporting Standard 102 (effective January 2015) (FRS 102) and the requirements of the Statement of Recommended Practice (SORP) applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2015) (Charities SORP FRS 102).

The British Tunnelling Society meets the definition of a public benefit entity under FRS 102. Assets and liabilities are initially recognised at historical cost or transaction value unless otherwise stated in the relevant accounting policy note(s).

There are no material uncertainties about the charity's ability to continue, and so the going concern basis of accounting has been adopted.

Income

All subscriptions and investment income is accounted for when received, except in the case of subscriptions which are specifically stated to be in respect of an ensuing accounting period. No credit is taken for subscriptions unpaid at the balance sheet date.

Expenditure

Expenditure is recognised when there is a legal or constructive obligation to transfer resources to a third party, settlement is probable and the amount can be measured reliably. Expenditure is included within the Statement of Financial Activities on an accruals basis.

Fund Accounting

Unrestricted funds can be used in accordance with the charitable objectives of the Society, at the discretion of the Trustees. Restricted funds can only be used for the particular restricted purposes within the objectives of the Society.

Taxation

The charity is exempt from corporation tax on its charitable activity.

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2022

1 Member's subscriptions

The geographical analysis of subscriptions is as follows:

	2022	2021
	£	£
United Kingdom	92,236	91,604
Rest of the World	18,696	18,518
	110,932	110,122

2 Debtors

	2022	2021
	£	£
Debtors	-	5,240
Prepayments	112,083	121,178
ICE Intercompany	8,738	19,888
	120,821	146,306

3 Creditors

	2022	2021
	£	£
Purchase Ledger Control Account	10,480	6,614
Subscriptions in advance	27,313	32,166
Accruals	5,160	3,980
Other Creditors	7,160	9,818
Receipts in Advance	166,300	240,902
	216,413	293,480

Within the amount for other creditors BTS are holding £6,832 on behalf of Think Deep UK

4 Employees and Employment costs

The society does not employ staff directly.

5 Analysis of net assets between funds

	Unrestricted funds	Restricted funds	Total Funds
	£	£	£
Fund balances at 31 December 2022 are represented by:			
Current assets	573,608	7,296	580,904
Current liabilities falling due within one year	(216,413)	-	(216,413)
	357,195	7,296	364,491

6 Statement of movement in funds

	Unrestricted funds	Restricted funds	Total Funds
	£	£	£
Balance brought forward at 1 January 2022	312,914	5,496	318,410
Net movement in funds	44,281	1,800	46,081
Fund balances carried forward at 31 December 2022	357,195	7,296	364,491

7 Restricted Funds

The Doug Allenby Award was established in 2020, the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory.

8 Committee Members

Committee Members do not and never have received any remuneration.

	2022	2021
	£	£
Travel and subsistence expenses reimbursed to committee members (n.b.3 trustees reimbursed in 2022, 1 in 2021)	1,507	766
	1,507	766

BRITISH TUNNELLING SOCIETY

England & Wales - Charity number 1017887

Accounts

British Tunnelling Society
Annual Report and Accounts 2021

James Clark Medal Winners lunch

Kate Cooksey, BTS Chair
British Tunnelling Society
bts.chair@britishtunnelling.org.uk

Executive Summary

Ring Building on Thames Tideway West

2021 was the year of two halves, with the latter half bringing a momentary period of normality to the BTS and the industry, which was grabbed with great delight.

After embracing a new normal many projects made significant milestone progress in 2021, including the preparation and launch of a number of TBMs for major projects such as HS2, as well as key procurement announcements.

Our membership has seen a notable rise in Individual membership, however we have had a slight fall in young member and corporate membership expected to be due to reduced opportunities for in person events. There is also a continuing slight reduction in overseas memberships.

The first half of the year saw the continuation of BTS and BTSYM evening lectures being held online via our You-tube channel, however we were able to relaunch in person events at the BTS Conference and held three in person lectures at the ICE from October to December. We have had a good range of topics from 'Experiences from TBM Tunnelling in Difficult Ground', the 'North York Polyhalite Project Mineral Transport System', 'CERN's High Luminosity Large Hadron Collider' and 'Low, intermediate and high pressure compressed air working' along with the return of the 'Tideway Update'. Our live You-tube hosted events sustained a high level of online viewing only dropping slightly once in person events were able to resume.

Sadly, once again our Annual Dinner and Design and Construction Course were postponed as events of such size were still not able to be held. However we hosted four well attended on-line CPD courses with Warwick University, covering an Introduction to Tunnelling, Health and Safety in Tunnelling, Tunnel Design and Finite Element Analysis in Tunnelling short courses.

Autumn 2021 brought a return to in person events and we started with the BTS Conference at the QEII Centre in Westminster, followed by welcoming 54 delegates to the BTS Underground Health and Safety Course at the ICE.

The 2021 James Clark Medal was awarded to Robert Ibell and we presented his award at our November evening lecture. We were also able to award our 2020 Medal recipient, Helen Nattrass, with her medal at the October evening lecture. However, we held the Harding Prize virtually and this was awarded to Benjamin Lafarga for his excellent entry.

The revision of the BTS Guide to the WCA regs was completed and the document published in July 2021. Progress has also continued with the development of the SCL Best Practice Guide and BTS Specification 4th Edition which should both be ready for publication in mid-2022.

We launched our new look BTS Website in February 2021 and website content has also been expanded to include Transforming Tunnel Safety. Benefits of the new website include significantly reduced ongoing costs, greater freedom of page set up and an upgraded payment platform for our events.

Plans for the 50th Anniversary Book continue at pace and a sample book chapter and example size book were made available to be viewed at the BTS Conference. The publication of the book has been delayed until 2022 to incorporate all the stories we have to share.

I would like to thank all the committee for all their support and effort during my second year as Chair, they have thoroughly embraced a continuation of a mix of in person and online interactions, whilst finding time to help shape the approach and delivery of BTS activities throughout 2021. I am incredibly grateful for the passion and enthusiasm of our individual, corporate and committee members and what has been achieved by their voluntary efforts. I also thoroughly enjoyed the return to in person events where I was able to meet so many of you as Chair.

Whilst not a complete return to normality the future for UK tunnelling is looking bright and full of opportunities and I believe that our Society will continue to flourish and make a very significant contribution to that workload.

Kate Cooksey

BTS Chair

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1. BTS Committee

Chair: Kate Cooksey, Morgan Sindall
Vice Chair: Rod Young, Barhale Construction
Immediate Past Chair: Ivor Thomas, BAM Nuttall

Elected Members and Trustees

Name	Company	Term	Responsibility
John Corcoran	Thames Tideway	Retired 2021	Papers & Meetings
Brian Lyons	Dr Sauer and Partners	Retired 2021	Awards & Courses
Benoit Jones	Inbye Engineering	Retired 2021	Technical
Sarah Langley	Sika Ltd	Retires 2022	Papers & Meetings
Chris Pressdee	Construction Industry Research and Information Association	Retires 2022	Education
Ignacio Castillo	Skanska	Retires 2022	Awards & Courses
Alastair Smith	Jacobs	Retires 2023	Communications
Christoph Eberle	Mott MacDonald	Retires 2023	Technical
Jérôme Furge	Bouygues Travaux Publics	Retires 2023	Conference (Oct 2021 onwards)
Mehdi Hosseini	London Bridge Associates	Retires 2023	
Richard Sutherden	J Murphy & Sons Limited	Retires 2024	
Mike King	MKTunnelling Limited	Retires 2024	
Tim Smart	HS2 Ltd	Retires 2024	

Co-opted Members:

Name	Company	Responsibility
John Corcoran	Thames Tideway	Annual Dinner
Ken Spiby	London Bridge Associates	50th anniversary celebrations
Eddie Woods	Consultant	T&TI Editorial Advisory Board
John Scholey	Retired	Annual Dinner
Paul Perry	Hewson Consulting Engineers Ltd	BGA, PHEW Liaison
Divik Bandopadhyaya	London Bridge Associates	Young Members Chair (From 5 November 2020), Digital Delivery & Logistics from 4 November 2021, Website from February 2022.
Alasdair Fraser	Atkins	Young Members Chair (From 4 November 2021)
Shani Wallis	Journalist	Media Relations and Publishing
Damian McGirr	COWI UK Ltd	ITA Affairs
George Demetri	Compelo	Tunnels and Tunnelling magazine
Roger Bridge	Balfour Beatty	Education, Think Deep

Anita Wu	London Bridge Associates	Website
Mark Leggett	Mott MacDonald	Conference, Education, APGGI (up to October 2021)
Neil Moss	Gall Zeidler Consultants	May 2021 onwards

Institutional Representatives:

Name	Company	Responsibility
Andy Flowerday	Barhale	Pipe Jacking Association
Bill Grose	Independent	Institution of Civil Engineers, APPGI, ITIG
Alan Bozeat	Hunter Personnel	Institute of Materials, Minerals, and Mining
Andrew Hindmarch	Mott MacDonald Ltd	Institute of Materials, Minerals, and Mining
Donald Lamont	Hyperbaric & Tunnel Safety Ltd	Health and Safety, Technical
Neil Moss	Gall Zeidler Consultants	Technical (up to May 2021)

2. Chair's Report

2021 brought another unusual year with a gradual return to a sense of normality during the latter half of the year. For the tunnelling industry it saw the ramping up of delivery of major projects such as HS2, Silvertown and Lower Thames Crossrail, with many project teams now adjusted to hybrid working.

The BTS continued to deliver online events, hosted by the BTSYM Chair Divik Bandopadhyaya on our BTS YouTube channel who I am once again incredibly thankful to for supporting keeping the virtual presence of the BTS going through such an unusual period of time.

2021 however also brought a taste of a return to normality in Autumn where it was a great privilege to have my first in person event as Chair giving the David Wallis lecture at the BTS Conference. It was great to see so many friends and colleagues coming together and catching up at such a fantastic event after such a long hiatus. It was also great to be joined by so many of our international colleagues such as Martin Herrenknecht. The BTS are very grateful to Tunnelling Journal for managing such a fantastic event with the BTS.

I am incredibly thankful to all our speakers who continued to embrace the online experience as well as those that have given evening lectures in person. They have all given their time to come and present to us and share their knowledge and experience, with many having made an exceptional additional level of preparation to help make each of our events a success. The wide and varied selection of evening presentations not only showcases what our industry can do but it also continues to be a leading light in the knowledge sharing activities of the ICE and its Associated Societies.

It is fantastic to see people back at our in person events but also that our online presence and lecture views is still remaining high. I thoroughly enjoyed the evening meetings I hosted at One Great George Street where audience interaction really added to the event, although I couldn't resist asking a question or two myself!

Learning from the interest in our 2019 and 2020 programme we also welcomed back the Tideway project for an update, once again giving an opportunity for younger members on the project to share their experiences so far.

The return to the ICE for evening meetings brought an almost return to 'Sausage and Chips' in the ICE bar, however with the ICE bar and catering remaining closed we looked to the Westminster Arms as an

alternative. We look forward to the ICE bar and catering reopening for evening meetings in 2022. It has been great to see the BTS spirit and community enjoying in person meetings again.

However, with sadness, we had to once again postpone and cancel many of our much loved events including the Annual Dinner in May and the Design and Construction Course in July. We are incredibly grateful to many members who supported the BTS once again by foregoing a refund for the Dinner for a second year and holding their bookings for the 2022 Dinner. It was fantastic however to see so many delegates at the BTS Underground Health and Safety Course and see the benefits of live interaction.

The disruption to our calendar has given us further time to work on improvements to our courses, fostering links to other tunnelling groups around the world and our communications materials. We launched our new BTS Website in February 2021 - www.britishtunnelling.com, which has already brought us many benefits including an improved payment system for our events.

Our membership has seen a notable rise in individual membership, however we have had a slight fall in young member and corporate membership expected to be due to reduced opportunities for in person events. There is also a continuing slight reduction in overseas memberships. The challenge ahead is to further grow our membership which we hope will be easier to achieve with a 2022 return to in person events.

We have also continued with our aim to provide information and guidance with our publications, evening meetings and training courses. The work on our SCL Best Practice Guide and BTS Specification 4th Edition continues which should both be ready for publication in mid 2022.

It gave me great delight this year to be able to hold the Harding Prize in April after receiving a substantial number of entries. The prize was awarded to Benjamin Lafarga. It was great to see the enthusiasm from young tunnellers to enter the Prize and share their tunnelling experiences.

Plans for the 50th Anniversary Book continue at pace and a sample book chapter and example size book were made available to be viewed at the BTS Conference; it is rather overwhelming to see the amount of stories there are to be shared. The publication of the book has been delayed until 2022 to incorporate all the stories we have to share.

The BTS Young Members' group continues to grow and continued to embrace delivery of online lectures. They celebrated National Tunnelling Day/ World Tunnel Day on 4th December with a 24 hour zoom marathon, further developing our international links. Whilst their annual conference had to be postponed, they have focused on social media campaigns and events to continue to support the younger members of the tunnelling industry. They also hosted the first in person social just before the BTS conference.

The James Clark Medal 2021 was awarded to Robert Ibell in in recognition of his long and distinguished career in tunnelling, dedication to the BTS and commitment to developing young tunnel engineers. It was a delight to be able to award the medal to Robert Ibell in November and celebrate his achievements. We were also able to finally celebrate the achievements of the 2020 Medal recipient, Helen Nattrass, who was awarded her medal at our October meeting. I look forward to welcoming both to the James Clark Medal luncheon that will be held in October 2022.

For our members the normal working day has started to resemble pre-covid times but the new hybrid approach continues to provide opportunities for a more diverse workforce. The Thames Tideway Project has its last machine in the ground and is progressing with secondary lining and civils structures. York Potash has been busy tunnelling and shaft sinking and several of the machines have successfully launched on the HS2 London to Birmingham route. Bank Station Upgrade prepares for its blockade works whilst tunnelling at Hinkley Point continues, and works are progressing with the launch chamber

for the Silvertown Tunnel TBM. Looking further forward procurement is progressing for Lower Thames Crossing, A303 Stonehenge Tunnel and HS2 Phase 2a. Busy future workloads can be seen in further developments of HS2 Phase 2b and large hydro schemes such as Coire Glas.

Whilst I had hoped that 2021 would bring us closer to normality we instead embraced another year of largely remote working and celebrated the ability to host in person events during the Autumn. I thoroughly enjoyed the return to in person events that 2021 brought, especially the BTS Conference, where I was able to meet so many of you as Chair. I would like to thank all the committee for all their support and effort during my second year as Chair, the committee has remained active at all times in progressing the ambitions of the society and I am incredibly grateful for the positivity in approach, as well as all the spare time the committee members provide to make our society what it is. I am also incredibly grateful to our secretary, Katherine Coldwell, for all of her support and work to keep the BTS running smoothly, whilst having to work out how to deliver remotely.

3. BTS Objectives and Communications

Alastair Smith (Chair), Sarah Langley, Kate Cooksey, Ivor Thomas, Ignacio Castillez-Dominguez, Jerome Furge, Mehdi Hosseini, Tim Smart, Alasdair Fraser, Anita Wu, Ken Spiby, Shani Wallis, George Demetri.

Communication in 2021 has presented significant challenges due to the Pandemic restrictions. The Communication Strategy is under further review to incorporate the learning from the need to deliver meetings, communications and lectures using social media and digital platforms as a result of the COVID pandemic restrictions. While the restrictions resulted in unprecedented changes to the way the society had to deliver lectures, meetings and communications it also brought opportunities to reach wider audiences via the social media and digital platforms.

The primary aims of the Society communication strategy are to:

i. Promote the art and science of tunnelling, including the creation and use of underground space
ii. Inform and advance the education of its members
iii. Influence UK government, clients, and industry
iv. Inform the public.

This communication strategy aims to achieve the following:

- Make the BTS the first port of call and be seen as thought leaders in the industry
- Promote tunnelling as a credible career choice and contribute to the education of tunnellers
- Develop and promote readily available material and intellectual content, promoting best practice, and become the hub for tunnelling knowledge
- Make the BTS the forum for our members discussion, networking, and knowledge sharing
- Inform and influence national and local government, and influence and educate clients.

The pandemic required the continued use of emails as the primary method of communications to the members and the efforts by Katherine Coldwell are recognised and greatly appreciated by the society. For the social media the BTS operated on the Twitter, Facebook and Wikipedia platforms at the start of 2021 with the BTYSM running accounts on Facebook, Twitter, LinkedIn and Instagram. The BTS added a LinkedIn account in November 2021.

YouTube became the primary platform for delivery of the majority of the evening lectures and the committee meetings were facilitated using Microsoft Teams. Virtual social events such as bars after online meetings were also held to allow for member networking.

The number of followers/ subscribers on the different platforms are given below:

Platform	Year Created	Followers/ Subscribers *	Annual Increase in Followers δ
BTS Facebook	November 2020[i]	285	79
BTS Twitter	January 2014	1584	84
BTS LinkedIn	December 2021	76	N/A
BTS YouTube †	January 2018	1530	484

* Total till 31 December 2021

δ Total followers gained between 1 January and 31 December 2021

i Created in 2009 but remained unused till 2020

† includes BTSYM lectures and associated subscribers

The Communications Sub-committee has prepared some overarching guidance for social media posts to ensure the society's values are reflected in any postings on social media platforms.

The Communication Sub-committee has also been working to manage how the society responds to requests for comment with a list of primary contacts prepared and responses to typical topics in preparation.

Adverts published in Tunnels and Tunnelling International have continued to be part of the Communications strategy and have been focused each month on upcoming events. The subcommittee recognises with appreciation the work in preparing the adverts each month by Divik Bandopadhyaya.

The communications subcommittee is investigating a storage platform for the countless images and photographs that have been collected for the 50th Anniversary Book, which is expected to be published in 2022.

A highlight in the committee meeting programme was the June meeting when Rachel Skinner (OBE) the ICE President joined the meeting. Kate Cooksey gave a presentation about the BTS which was well received and there were useful discussions on topics close to Rachel's ICE agenda on Shaping Zero and skills development in construction and how the ICE and BTS can work collaboratively on furthering such important industry challenges.

We have looked deeply into the way our membership and our wider audience use social media and have worked with BTSYM to re-establish and expand our social media presence and develop a plan for the future. The number of subscribers on our YouTube channel has soared during 2020 and we have increased our spread across all our intended Social Media platforms.

Thank you again to the members of the team for your time and input.

4. Finance and Membership

This year we retained all of the existing rates and membership fees. The membership rates, per grade, can be seen in the table below.

The membership fee for 2021 again included the provision of a hard copy and digital version of Tunnels and Tunnelling magazine. An agreement has been signed between BTS and T&TI for 5 years in 2020 (with a 3-year break clause) and a reduced contribution from BTS to the magazine. This provides stability and value for money for a significant period of time.

Grade	UK	Overseas
Corporate Member Small (Up to 50 employees)	£430	£541
Corporate Member Medium (50 to 500 employees)	£685	£935
Corporate Member Large (More than 500 employees)	£1110	£1604
Individual	£85	£138
Retired	£32	£44
UK Student/Apprentice	£20	n/a
Young Member	£42	£53

Membership: The detail of the current membership (at the end of December 2021) is set out below:

	Member Classification	2021	2020	2019	2018	2017	2016	Change 2020/21
UK	Corporate members	84	88	82	75	71	50	-4
	Individual members	433	414	457	461	446	490	+19
	Students and Retired	68	69	67	76	72	83	-1
	Young Members	150	192	193	199	191	152	-42
	Total	**735**	**763**	**799**	**811**	**780**	**775**	**-28**
Overseas	Corporate members	7	8	8	8	6	6	-1
	Individual members	103	101	103	113	133	113	+2
	Students and Retired	7	5	6	7	8	7	+2
	Total	**117**	**114**	**117**	**128**	**147**	**126**	**+3**

The change in membership from 2020 has shown a very slight net decrease in total membership. There has been a slight reduction in the number of non-corporate members since 2020. However Corporate memberships also show a slight decrease after several years of increase.

Overall cash reserves increased to £465,584 by the end of 2021; the increase in overall cash reserves is due to further sponsorship payments for the BTS @ 50 book during 2021, with an improvement in Net Current Assets to £318,410 from £291,628 at the end of 2020. Within the reserve BTS hold funds on behalf of Think Deep UK which amount to £9,818.

The restricted fund has been created after a donation of £10,000 was made by the widow of Doug Allenby. The Doug Allenby Award was established in 2020 and the funds are to be used to award a medal to a Young Tunneller (BTSYM) annually in Doug's Memory. The fund is currently at £5,496.

5. Evening Meetings

Sarah Langley (Chair), John Corcoran (Chair up to May 2021), Christoph Eberle, Richard Sutherden, Divik Bandopadhyaya, Alasdair Fraser, Brian Lyons.

The year again has seen a full calendar of high-quality presentations covering a wide range of topics. The Committee's and members' thanks go to all the presenters.

As the Pandemic continued, we were forced to continue our YouTube presentations followed by virtual bars. It has been great to see so many attendees, even though in May a number of the viewers tuned in to see their favourite band, only to be met with Particle Physics!

This new platform has enabled us to engage with our members and friends all over the World and it has been wonderful to catch up afterwards in the "Virtual Bar" and then in real life in the final quarter of the year.

The programme of monthly BTS meetings through 2021 is as follows:

Date	Lecture Title & *Presenter(s)*	Venue/ Platform	Views†
21st Jan [1]	Three Great Challenges - Experiences from TBM Tunnelling in Difficult Ground *Lok Homes (The Robbins Compnay)*	YouTube [Δ]	2400
11th Feb [1]	Joint BTS/ MinSouth Lecture : North Yorks Polyhalite Project Mineral Transport System *Craig Sewell & Jason Fawcett (Strabag)*	YouTube [Δ]	2100
18th Mar [1]	Werrington Grade Separation - Curved Box Jack *Matt Hadden (Morgan Sindall Infrastructure)*	YouTube [Δ]	1400
15th Apr [1]	Harding Prize Final 2021 *Presenations by Harding Prize 2021 Finalists:* *Benjamin Lafarga, Christina Trigle & Cate Anthony*	YouTube [Δ]	1300
20th May [1]	CERN's High-Luminosity Large Hadron Collider (HL-LHC) Project *Pieter Mattelaer & James Gillies PhD (CERN)*	YouTube [Δ]	2000
17th Jun [1]	Hinkley Point C Nuclear Power Station Tunnelling and Marine Project *Matt Fowler (Balfour Beatty)*	YouTube [Δ]	1000
16th Sep [1]	Dewatering strategies for underground infrastructure in the London Basin *Toby Roberts (WJ Group)*	YouTube [Δ]	622
30th Sep*	Closing the Loop: Back analysis of sprayed concrete junctions *Dr Nicky de Battista (University of Cambridge)* *& Dr Alun Thomas (All2plan ApS)*	Queen Elizabeth II Center	N/A
20th Oct [0]	Low, intermediate and high pressure compressed air work *Dr Donald Lamont MBE & Roy Slocombe (CWAG)*	ICE [Δ]	309
18th Nov [0]	Digital Twins for condition assessment of Brunel's Rail Tunnels *Dr Anmol Bedi & Marco Invernici (Bedi Consulting)*	ICE [Δ]	356

9th Dec[0]	Tideway Update *Maurice Gallagher (Tideway), Jennifer Her (BMB JV), Ignacio Tognaccini-Sainz & Ricardo Manias (FLO), Matthew Campbell (CVB JV)*	ICE Δ	484

Note:
[1] Webinar [0] Hybrid (In-Person + streamed live on YouTube)
Δ Link to YouTube recording hyperlinked where applicable
† Approximate on YouTube; as on 31 December 2021
* Recording Unavailable/ Not Livestreamed

6. BTS Young Members

Divik Bandopadhyaya *(Chair), David Ashworth (Secretary), George Doulkas (Professional Development Sub-Chair), Ciara Maguire (Media & Social Sub-Chair), Cate Anthony (Schools & Universities Sub-Chair) and Alasdair Fraser (Outreach Coordinator [Sub-Chair Equivalent]).*

The BTSYM Committee year 2020/21 (spanning November 2020 to November 2021) continued to suffer the impact of the pandemic; wherein, no in-person events were held until September 2021 and school and university visits remained suspended. The pandemic also led to the cancellation of the BTSYM Conference 2021 (similar to 2020).

During the course of the year, the BTSYM held a series of webinars and online workshops – as listed in Table 6-1. It should be noted that the BTSYM AGM 2021 constituted the first in-person BTSYM lecture since February 2020 (with post lecture drinks sponsored by LBA); whilst the BTSYM Social on 29th September 2021 constituted the first in-person BTSYM event.

Table 6-1 - List of BTSYM Lectures & Workshop held between November 2020 and 2021

Date	Lecture Title & *Presenter(s)*	Venue/ Platform	Viewst
05 Nov 2020[1]	BTSYM AGM & Webinar : Digital Inspections - A Better Way *Will Howlett & James Connell (Arup)*	YouTube Δ	653
15 Apr 2021[1]	BTSYM Workshop : Point Clouds in Geoengineering *Ioannis Farmakis (Queen's University) & Stratis Karantanellis (Aristotle University of Thessaloniki)*	MS Teams*	~ 70 attendees
22 Apr 2021[1]	Joint BTSYM/ TAlym / ICE London G&S Webinar : Managing Safety in Tunnelling *Michael William Sanderson (Larsen & Toubro)*	YouTube Δ	1800
10 Jun 2021[1]	BTSYM Webinar : Thames Tideway Tunnel Victoria Embankment Foreshore *Florin Edu (Barhale) & Ala Hammad (Tideway)*	YouTube Δ	789
09 Sept 2021[1]	BTSYM Webinar : The Design of Gaskets for Segmentally Lined Tunnels *Mike King (MK Tunnelling Limited)*	YouTube Δ	858
28 Oct 2021	Joint BTSYM/ CPTym Webinar [Delivered in Portuguese] : Túnel Rodoviário de Silvertown, Londres - Poços e Cut & Covers *Cláudio Cabral Dias (Ayesa)*	Hosted on CPTym's YouTube Δ	440

29 Oct 2021[1]	Joint BTSYM/ CPTym Webinar : Lisbon Metro - Green and Yellow line extension *Francisco Bernardo (COBA Consulting Engineers SA)*	YouTube [Δ]	273
04 Nov 2021[0]	BTSYM AGM & Lecture : Explaining Quality Engineering *Tiago Geraldes-Rodrigues (Balfour Beatty)*	YouTube [Δ]	296

Note:

[1] Webinar [0] Hybrid (In-Person + streamed live on YouTube)

Δ Link to YouTube recording hyperlinked where applicable

† Approximate on YouTube; as on 31 December 2021

* Recording Unavailable/ Not Livestreamed

The said social (as presented in Figure 6-1), took place at Tattershall Castle (Westminster, London) on the day before the BTS Conference and hosted 35 attendees both young and experienced members of the UK as well as the global tunnelling industry. Drinks and refreshments at the event were sponsored by the BTSYM up to £300; however, on the day, various BTS Corporate Members sponsored refreshments once the BTSYM budget was reached. The BTSYM would therefore like to thank Sika Ltd, Normet UK and LBA for their financial contributions.

Figure 6-1 : BTSYM September 2021 Social

In addition to the above events, the BTSYM continued to provide general IT support to the BTS committee by aiding online streaming and managing the BTS' YouTube channel, as well as organising post-lecture virtual socials on Zoom. On the online front, the BTSYM's social media channels continued to witness reasonable growth over the year as depicted in Table 6-2.

Table 6-2 : BTSYM Social Media Followers Statistics

Platform	Year Created	Followers*	Annual Increase in Followers [δ]
BTSYM Facebook	September 2014	809	20
BTSYM Twitter	December 2011	1508	53

BTSYM LinkedIn	January 2019	4185	940
BTSYM Instagram	January 2016	421	Data Unavailable
* Total till 31 December 2021			
δ Total followers gained between 1 January and 31 December 2021			

Furthermore, in December 2020, the BTSYM through its involvement with the International Tunnelling Society Young Members (ITAym), championed the delivery of a 24 hour global Zoom Marathon on National Tunnelling Day/ World Tunnel Day (4th December 2020) – see Figure 6-2. As described by ITAym, the marathon "was an incredibly successful global event with 30 countries involved and more than 3000 participants from all over the globe".

The BTSYM's 30 minute long session at the marathon provided an update of its activities along with a general update of projects both in their delivery and planning stages within the UK. The recording of the UK slot (which also celebrated the 30th anniversary of the Channel Tunnel's service tunnel breakthrough) is available to view on YouTube.

Finally, continuing its legacy of international collaboration and knowledge exchange, the BTSYM once again supported the 2nd iteration of the Symposium for Young Tunnellers of Asia (SYTA; hosted online by Tunnelling Association of India Young Members on 7th August 2021). The proceedings of the symposium included presentations by Dr Ioannis Vazaios and William Thrope (both representing BTSYM), as well as an address by Divik Bandopadhyaya (BTSYM Chair 2020-21) .

Figure 6-1 : World Tunnelling Day 2020, 24 hour Zoom Marathon

7. Awards

Ignacio Castillo (Chair), Brian Lyons (chair up to May 2021), Chris Pressdee, Alastair Smith, Mike King, Anita Wu.

Harding Prize 2021

The Harding Prize for 2021 was awarded to Benjamin Lafarga.

James Clark Medal 2021

The James Clark Medal winner for 2021 was Robert Ibell. The award was made in recognition of his long and distinguished career in tunnelling, dedication to the BTS and commitment to developing young tunnel engineers.

James Clark Medal Winners Luncheon 2021

The luncheon was not held in 2021 due to COVID 19. Previous James Clark Medal winners will be invited to the 2022 luncheons planned for February and October 2022.

Doug Allenby Award

The Doug Allenby Award was established in 2020, the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory. The 1st award will be made at the BTSYM Conference in 2022.

8. Education

Chris Pressdee (Chair), Mehdi Hosseini, Mike King, Tim Smart, Divik Bandopadhyaya, Mark Leggett, Roger Bridge, Kate Cooksey, Ivor Thomas, Christoph Eberle, Benoit Jones.

MSc Course

The MSc Tunnelling and Underground space course was not run for the academic year 2021/2022 due to the impacts of COVID and the departure of Dr Alan Bloodworth from The University of Warwick.

As a result, and in an effort to ensure continued educational opportunities, a series of short CPD courses were run in collaboration between Warwick and the BTS as follows:

- Introduction to Tunnelling (Online) 27th – 29th April 2021
- Health and Safety in Tunnelling (Online) - 25th – 27th May 2021
- Tunnel Design (Online) 15th – 17th June 2021
- Finite Element Analysis in Tunnelling (Online) 13th – 15th July 2021

The courses were well attended and feedback from attendees was positive.

MSc Course – BTS Bursary

The BTS did not award a bursary in 2021 due to the pause in the MSc Tunnelling and Underground Space at Warwick University.

9. Training and Courses

Rod Young (Chair), Sarah Langley, Alastair Smith, Jerome Furge, Mehdi Hosseini, Richard Sutherden, Tim Smart, Divik Bandopadhyaya - BTSYM, Anita Wu.

BTS Tunnel Design and Construction Course

The twelfth Tunnel Design and Construction course was to be held at Warwick University in July 2021. But due to the Covid pandemic unfortunately the course was cancelled.

The 2022 course will be held from 4th July to 8th July, and will once again be held at Warwick University.

BTS Underground Health and Safety Course

The annual BTS Underground Health and Safety Course was held at the ICE on 22nd & 23rd Nov @ the ICE London, with 54 bookings.

The 2022 Course will be held at the ICE in London on 21st and 22nd November.

On Line CPD Courses

4 courses were arranged with Warwick University, to continue members' development through the covid period.

- Introduction to Tunnelling - 27th – 29th April 2021– 9 attended.
- Health & Safety - 25th -27th May 2021 – 18 attended.
- Tunnel Design - 15th – 17th June 2021 – 18 attended.
- Finite Element Analysis in Tunnelling - 13th – 15th July 2021 – 13 attended.

Tunnel Survey Course

No Tunnel Survey Courses were arranged during 2021 due to the Covid pandemic.

10. TunnelSkills

(Rod Young reporting)

ACHIEVEMENTS for 2021:

Level 2 Tunnel Operative Apprenticeship

• The first cohort of apprentices from the Tideway project have all completed apart from two, who have had barriers to completion due to Covid. They are expected to complete shortly.

• A second cohort has been recruited on the HS2 C1 section. TunnelSkills supported this focused recruitment campaign and thirteen apprentices were appointed in September 2021. Completion of the apprenticeship, expected at the end of 2022.

• TunnelSkills is currently supporting employers who are looking to recruit further cohorts from April 2022. TunnelSkills will continue to support with attraction and recruitment activities, as well as routes to expanding the provision required to meet expected demand.

Immersive Learning Project

• In 2021, the development of the resources was completed with enhancements following feedback from Members' pilots, and to mitigate some of the barriers presented by Covid.

• The project continues into its final year with a focus on promotion of the resources to employers with a view to them utilising the resources in their own programmes. The initial vision of the project was that these would be used to support tunnelling specific training programmes and also engagement with education to promote tunnelling as a career.

• Engagement with the resources has been high with positive feedback.

• It is expected that TunnelSkills will achieve the targets originally agreed with CITB at the outset of the project.

TunnelSkills influencing industry specific standards and qualifications

• The Multi Service Vehicle (MSV) CPCS category (A51) was approved for delivery by NOCN in November 2021, following extensive support from TunnelSkills members. CITB have approved four grant claims from February 2022.

NVQs, Assessor Training and Qualification

• TunnelSkills continues to promote to Members and support with a financial incentive.

• In 2021, one candidate started the Assessor qualification. Another candidate achieved the Level 3 Award in Understanding the Principles and Practices of Assessment and is now working towards the Level 4 Award in the Internal Quality Assurance of Assessment Process and Practice.

Promotion of the work of TunnelSkills – increasing reach and influence

• TunnelSkills succeeded in having an article published in the specialist Tunnelling media (Tunnels and Tunnelling International), which kick started a successful social media campaign, with TunnelSkills LinkedIn and Twitter accounts launched in September 2021.

• LinkedIn has proved particularly successful, with almost 450 followers (individuals who actively choose to follow TunnelSkills' posts). Followers include not only those working in tunnelling (who span all job functions and levels within tunnelling, from loco drivers to project directors), but also individuals across the world (Australia, India, UAE, Spain) and those from other industries (education, building, recruitment, design).

• In October 2021, TunnelSkills commanded a stand at the British Tunnelling Society (BTS) conference - for the first time having a stand in its own right. The aim of this was to promote the Immersive Learning resources and the SKATE Matrix.

• TunnelSkills continues to be an active partner on the Transforming Tunnelling Safety Group (TTSG) and shares updates and information across the wider tunnelling industry.

11. Health and Safety and Standards

Donald Lamont

Other members of UK Delegation to CEN/TC151/WG4 - Steve Parker, Sean Martin.

CEN/TC151/WG4

WG4 met six times during 2021 all by Zoom. Progress continued on the revision of ENs 12110 and 16191. By the Autumn 2021, the technical revision of ENs 16191 and 12110 Parts 1 and 2 had been effectively completed and a request was made to CEN to hold a Committee Internal Ballot to get approval to move both standards from Preliminary Work Item status to New Work Item status. Positive votes were secured for both. Consequently, there is now a 36-month period within which CEN enquiry, resolution of comments, HAS consultant assessment, editing and translation, culminating in Formal Vote takes place, leading to harmonisation and listing in the Official Journal of the EU.

Multi Service Vehicles – a first draft of a standard for MSVs was received in early 2021, it having been prepared by France. After extensive discussions it was agreed to extend the scope to cover battery powered MSVs. Discussion on the detail of the draft continued throughout 2021.

Refuge chambers – work on a standard for refuge chambers has been put off indefinitely due to lack of resources in CEN/TC151/WG4.

CEN/TC196

At the end of 2021 CEN/TC196 agreed to revise EN 1889-2 – locomotives for underground use in mining and tunnelling. As yet no work has been undertaken but BTS will participate in the revision on behalf of BSI.

BS 6164:2019

No major issues arose with this standard during the year. In late 2021 it was formally adopted as the national standard for tunnelling safety by the Standards Institute of Israel.

BTS CAWG

CAWG met three times by Zoom. The revision of the BTS Guide to the WCA Regs was completed and the document published in July 2021. CAWG considered the prevalence in the workforce and the effect of patent foramen ovale (PFO) in triggering DCI at the November meeting.

12. Technical Sub-Committee

Christoph Eberle (chair), Jérôme Furge, Mehdi Hosseini, Benoit Jones (co-opted), Dr Donald Lamont (co-opted), Ivor Thomas, Chris Pressdee, Mike King, Richard Sutherden, Divik Bandopadhyaya, Shani Wallis, Paul Perry, Andy Flowerday, Alan Bozeat, Andrew Hindmarch, Tom Robinson (co-opted), Omar Mohammed (co-opted), Marco Invernici (co-opted), Charles Allen (co-opted), Jessica Serrano (co-opted).

The Technical Sub-committee is working on the following principal topics which are summarized below:

SCL Best Practice Guide

The SCL sub-committee continued to work on the SCL Best Practice Guideline throughout 2021. The design guide has been copy-edited and is almost ready for publication. The edits have been back checked by the authors and a final version has been prepared. After updating the references the guide will be ready for publication in 2022.

***BTS Specification* 4th Edition**

After receiving comments on the previous edition via the blog, the committee has begun revising the text in earnest. Section editors were identified, and workshops on sustainability and sprayed concrete held. The updating process is advancing well with an anticipated draft for peer review being available July 2022.

13. APPGI

Bill Grose (Chair); Kate Cooksey; Mark Leggett; Ivor Thomas, Tim Smart, Jerome Furge.

The All-Party Parliamentary Group for Infrastructure (APPGI) is run jointly by the ICE and the BTS, having merged the BTS's APPG on Underground Space (APGUS) several years ago in order to focus Parliamentarians on fewer overlapping All-Party groups.

This enables BTS to concentrate on site visits and projects and initiatives of interest to its members and parliamentarians whilst leaving the administration of the Group and broader ICE policy aims to the institution's Public Affairs department to manage.

The stated aim of the group is to "highlight the importance of infrastructure, engineering and the use of underground space to the economy and society, and to hear from experts and discuss matters arising."

Moving the meetings from late afternoon to 8:30am in 2019 increased attendance from Parliamentarians and the meetings were held frequently enough to have gained some momentum.

There were no meetings during the 2020/21 session as a consequence of COVID-19 restrictions.

14. Website

Anita Wu (Chair), Ken Spiby, Alastair Smith, Shani Wallis.

BTS Website

Anita Wu (Chair)

The new-look BTS website was launched in February 2021. The new website is www.britishtunnelling.com. The BTS emails have also been upgraded to the new domain.

Please visit the website for further details.

Evening meetings, conferences, training courses and news are regularly updated with archive meetings available to watch online https://britishtunnelling.com/events/evening-meetings-archive.

Information on BTS publications and a suggested reading list are under the knowledge section of the website. The content for sustainability has also been expanded https://britishtunnelling.com/knowledge/sustainability.

The website content has continued to expand for Transforming Tunnel Safety (TTS) https://britishtunnelling.com/tts/transforming-tunnel-safety to encourage knowledge sharing of lessons learnt, best practice guidance and safety videos on tunnelling projects.

In developing the new website, we have changed to a free hosted site, which significantly reduces the ongoing costs (such that the new site will prove more economical than the old after just 3 years), whilst also permitting us a greater freedom of page set-up. The payment platform has been upgraded from the old site.

Tunnels Database

Ken Spiby (Chair), Mehdi Hosseini

The tunnels database is still not available to Members or to the public. It has not been possible to get the necessary controlled access to work reliably with the current database structure.

Further work on the database was stopped pending the completion of the new BTS website. Three meetings were held in 2021 and further testing carried out. Following further testing in 2022, it is intended that a recommendation be made either to modify or re-build.

15. 50th Anniversary

Working Group: Ken Spiby (Chair), Sarah Langley, John Corcoran, Anita Wu, Divik Bandopadhyaya
General "BTS at 50 Sub-committee" as above plus Ivor Thomas, Mark Leggett, Shani Wallis, Kate Cooksey, Rod Young, Chris Pressdee, Ignacio Castillo, Sarah Langley, Mike King, Richard Sutherden.

The BTS celebrated its 50th Anniversary in March 2021, but the Covid pandemic meant that this was a much more muted celebration than had been hoped:

- It was not possible to hold the 2021 Annual Dinner.
- The two-day BTS Conference planned for March 2021 had to be delayed until late Sept, and in postponing, lost much of its Anniversary focus.

- We were unable to meet in person for much of the year.
- We were unable to launch the planned outreach programme. A BTSYM initiative, this programme aimed to make use of the new BTS book to visit schools and universities.

A book: "Tunnelling Tales: Fifty years of the British Tunnelling Society" is under production, but we were unable to complete this in time to publish in 2021.
Interest in the book has been much greater than was anticipated. By the end of 2021, we had received 421 contributions from around 200 authors. Of these:

- 381 have been through a first edit stories, bringing the word count down from 302,000 words down to 257,000 words.
- 13 stories have been rejected completely.
- 27 stories (33,000 words) remain to be edited and we anticipate a further 100 or so stories are yet to be written.

For the BTS Conference in late Sept 2021, we produced and displayed:

- A 32-page 'Blad' (sample), including copies of pages direct from the book, showing what we intend the final book to look like.
- A 750 page dummy version with all pages blank, showing the actual size the book, the binding, the cover and dust jacket, the paper quality etc....

The target is now to print and publish in the summer of 2022, with pre-ordering available from April. Strong pre-orders will mean a larger print run, resulting in savings per copy.

16. T&T Editorial Advisory Board (EAB)

Eddie Woods (Chair), Kate Cooksey, Roger Bridge, Andrew Smith, Ken Spiby, Ivor Thomas, Donald Lamont, Darren Page, Dave Terry, Benoit Jones, John Corcoran, Petr Salak, Rosa Diez, George Demetri, Wojciech Markowski (BTSYM), Christoph Eberle, Mehdi Hosseini and Divik Bandopadhyaya.

2021 continued where 2020 left off. All the editorial meetings have been virtual. There have been some changes to the EAB with Mark Leggett and Rashik Bhanderi stepping down, and we thank them both for their contributions.

George Demetri and Julian Champkin have done a fantastic job in very difficult circumstances. An example being that George does not have access to old copies of T&TI not converted to pdf as the offices have been shut from Covid.

Originally, Keivan Rafie was responsible for drafting the Rules of Thumb, but it was felt by the EAB that the source of these could be expanded to reach out to industry experts. Some of the EAB stepped up including Ivor Thomas and Andrew Smith and the board feels this is a useful approach.

George has advised that for personal reasons he has decided to step down as editor and a recruitment process is in place. Until a replacement is found, he will be staying on to help produce the magazine, working on a two day/week basis, but this may change. This means that writing and uploading news and social media has now been outsourced. The EAB thanks George for his efforts.

The magazine is in a better place than at the end of last year and the quality has improved. There have been three meetings of the EAB in the year reviewing all of the issues. There has been consultation on several articles prior to publication.

17. International Tunnelling Association

Damian McGirr

The WTC and General Assembly was unfortunately postponed in 2021 in Mexico due to the global pandemic. This was another very tough and troublesome year for all involved with the ITA family. Copenhagen will now host the WTC in 2022 which has been postponed until September 2022.

Damian McGirr continued his role in the ITA Governance Council for 2021 examining the activity of the Executive Council and its conformance with the Statutes and By Laws, as well as reviewing governance, ethics and conduct of the Association. Damian has now been nominated by the BTS to become a member of the Executive Council. The election for this will take place at the General Assembly in 2022.

ITA publications can be viewed at https://about.ita-aites.org/publications

Working Groups

- Working Group 2: Research
- Working Group 3: Contractual Practices
- Working Group 5: Health and Safety in Works
- Working Group 6: Maintenance and Repair
- Working Group 9: Seismic Effects
- Working Group 11: Immersed and Floating Tunnels
- Working Group 12: Sprayed Concrete Use
- Working Group 14: Mechanized Tunnelling
- Working Group 15: Underground and Environment
- Working Group 17: Long Tunnels at Great Depth
- Working Group 19: Conventional Tunnelling
- Working Group 20: Urban Problems, Underground Solutions
- Working Group 21: Life Cycle Asset Management
- Working Group 22 : Information Modelling in Tunnelling

COMMITTEES

- ITACUS (Underground Space)
- ITA Tech (technical documentation)
- ITACET (Education and Training)
- ITACOSUF (Operational Safety of Underground Facilities)

18. Annual Dinner

John Scholey (Chair), Kate Cooksey, John Corcoran, Roger Bridge, Shani Wallis.

For the second year running the restrictions in place on gatherings prevented the society from holding its annual dinner. The majority of those who retained places originally booked for the aborted 2020 dinner opted to retain their bookings for a further year. Assuming the dinner can be held again in 2022, that event will become the 32nd Annual Dinner.

19. Institution of Civil Engineers

Bill Grose

The BTS continues to enjoy a close and positive relationship with ICE. As one of the largest and most active of the ICE's Associated Societies the BTS 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.

A change in the financing arrangements in 2018 encouraged us to focus more on technical projects and to seek funding assistance from the ICE Enabling Fund. One project has been funded and successfully completed (Hyperloop Challenge, in 2020) and others are under consideration. This involves working closely with the Vice President for the Learned Societies.

The ICE regularly refers tunnel-related media queries to BTS committee members and relies on our advice and expertise in such matters. These referrals have resulted in senior BTS members appearing on TV (for example ITN News on the tunnels under Euston Square being dug by HS2 protestors), on radio and reported in the national and local press.

The BTS and the ICE continue to jointly run the All Party Parliamentary Group for Infrastructure.

20. BGA Liaison

Paul Perry

This year has remained a challenging one for all, although like the BTS, the BGA have continued to see a growing attendance from online participation at their evening meetings. Perhaps this is the new normal!

The two organisations continue to liaise regarding evening meetings and the like, to ensure that a varied range of projects and subjects are presented for the attendees.

Paul Perry, a member of the BTS committee, regularly attends BGA meetings and forms the communication link between the two groups. We look forward to a fruitful coming year.

21. Reserves Policy

The Trustees policy for reserve is for there to be at least the equivalent 12 months expenditure, this will ensure sufficient funds will be available to meet the needs of the Society. BTS reserves at the end of 2021 are £318,410. Due to the impact of Covid expenditure for 2021 is £119K. BTS expect this amount to increase in 2022 returning to above the £270K expenditure from 2019.

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:

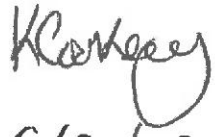
- Select suitable accounting policies and then apply them consistently
- Make judgements and estimates that are reasonable and prudent
- State whether applicable accounting standards and statements of recommended practice have been followed, subject to any material departures disclosed and explained 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 overleaf was approved by the Committee and was signed on its behalf by:

Ms Kate Cooksey
Chair of the British Tunnelling Society



Date of Approval: 6/2/23

22. Legal and Administrative Information

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.

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

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.

23. 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 2021. The financial statements have been prepared on the accounting policies set out in 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 January 2019.

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. Ten members of the Committee are elected by electronic/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 Chair 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 Chair's term of office, they 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 and 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 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.
- 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 the above aims.

Administration of the Society

The business affairs of the Society are administered by a committee consisting of ten elected members, several co-opted and ex officio members together with a representative from the Institution of Civil Engineers, the British Geotechnical Association, the International Tunnelling and Underground Space Association, the Institute of Materials, Minerals and Mining and the Pipe Jacking Association.

The 2021 AGM saw vacancies arise in the Committee, due to the retirement of elected members. This year 3 BTS members were duly elected to serve from the 2021 AGM for a period of three years. They were: Richard Sutherden, Tim Smart and Mike King.

In addition, the Committee requested that Eddie Woods, Anita Wu, Donald Lamont, Shani Wallis, Ken Spiby, Roger Bridge, Mark Leggett, George Demetri and John Scholey continue their roles as co-opted

members of the Committee, which they agreed to do and welcomed John Corcoran remaining on the Committee this time as a co-opted rather than elected member. Divik Bandopadhyaya took on the responsibility of the Young Members' Chair in 2020, followed by Alasdair Fraser in 2021. 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.

24. Report of the independent examiner

I report to the trustees on my examination of the accounts of the British Tunnelling Society ('the association') for the year ended 31 December 2021.

Responsibilities and basis of report

As the Trustees of the Association (and also its directors for the purposes of company law) you are responsible for the preparation of the accounts in accordance with the requirements of the Charities Act 2011.

I report in respect of my examination of the charity's accounts carried out under section 145 of the Charities Act 2011 and in carrying out my examination I have followed the Directions given by the Charity Commission under section 145(5)(b) of the Charities Act 2011.

Independent examiner's statement

I have completed my examination. I confirm that no material matters have come to my attention in connection with the examination giving me cause to believe:

1. accounting records were not kept in respect of the Association as required by section 130 of the Act; or
2. the accounts do not accord with those records; or
3. the accounts do not comply with the applicable requirements concerning the form and content of accounts set out in the Charities (Accounts and Reports) Regulations 2008 other than any requirement that the accounts give a 'true and fair view which is not a matter considered as part of an independent examination.

I have no concerns and have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Jonathan Healey FCA
Lindeyer Francis Ferguson Limited
Chartered Accountants
North House
198 High Street,
Tonbridge, Kent
TN9 1BE

Date 6 February 2023.

BRITISH TUNNELLING SOCIETY
STATEMENT OF FINANCIAL ACTIVITIES
(INCLUDING INCOME AND EXPENDITURE ACCOUNT)
FOR THE YEAR ENDED 31 DECEMBER 2021

	2021 Unrestricted funds	2021 Restricted funds	2021 Total funds	2020 Total funds
INCOME FROM	£	£	£	£
Charitable activities:				
Subscriptions	110,122	-	110,122	117,852
Income from other trading activities:				
BTS CPD Courses	24,800	-	24,800	-
Royalties & Sales	275	-	275	1,087
Underground Health & Safety Course	10,810	-	10,810	-
Grant - Hyperllop Challenge (R & D)	-	-	-	7,500
Sundry Income	-	-	-	264
Sponsorship	-	-	-	889
Doug Allenby Award	-	-	-	10,000
Investments:				
Interest	7	-	7	165
Total Income	146,014	-	146,014	137,757
EXPENDITURE ON				
Charitable activities				
Postage	5	-	5	28
Printing, stationery and photocopying	-	-	-	27
Meeting Expenses and secretarial	15,170	-	15,170	15,970
Subscriptions to other bodies	1,155	-	1,155	1,120
Other costs	1,296	-	1,296	1,507
Publicity	-	-	-	883
Publications	6,000	-	6,000	-
Website	854	-	854	13,272
Award & Prizes	1,781	4,504	6,285	-
Grant	6,000	-	6,000	12,000
Hyperloop Challenge (R & D)	-	-	-	14,400
Sundry Expenses	500	-	500	-
Professional fees	4,202	-	4,202	4,162
	36,963	4,504	41,467	63,369
Expenditure on raising funds				
Expenses re course and dinner	29	-	29	12,450
Publications	41,904	-	41,904	41,544
Underground Health & Safety Course	9,219	-	9,219	1,730
General Function Expenses	-	-	-	434
Young Members Committee	309	-	309	226
BTS CPD Courses	1,744	-	1,744	-
BTS Conference	3,600	-	3,600	-
Bad Debt	20,960	-	20,960	-
	77,765	-	77,765	56,384
Total expenditure	114,728	4,504	119,232	119,753
Net income and net movement in funds	31,286	(4,504)	26,782	18,004
RECONCILIATION OF FUNDS				
Fund balances brought forward 1 January 2021	281,628	10,000	291,628	273,624
Fund balances carried forward at 31 December 2021	312,914	5,496	318,410	291,628

The statement of financial activity includes all gains and losses in the period.

All income and expenditure derives from continuing activities.

BRITISH TUNNELLING SOCIETY
BALANCE SHEET
AS AT 31 DECEMBER 2021

	Notes	2021 £	2020 £
CURRENT ASSETS			
Debtors	2	146,306	114,948
Short term deposits		62,583	62,583
Cash at bank		403,001	380,532
		611,890	558,063
CURRENT LIABILITIES			
Creditors: Amounts falling due within one year	3	293,480	266,435
NET CURRENT ASSETS		318,410	291,628
INCOME FUNDS			
Unrestricted	6	312,914	281,628
Restricted	6	5,496	10,000
		318,410	291,628

The notes on page 30 to 32 form part of these financial statements.

Approved by the committee on 6/12/23 and signed on its behalf by:

KCooksey

Kate Cooksey - Chair

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2021

Accounting Policies

Accounting Convention

The financial statements have been prepared in accordance with the Financial Reporting Standard 102 (effective January 2019) (FRS 102) and the requirements of the Statement of Recommended Practice (SORP) applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2019) (Charities SORP FRS 102).

The British Tunnelling Society meets the definition of a public benefit entity under FRS 102. Assets and liabilities are initially recognised at historical cost or transaction value unless otherwise stated in the relevant accounting policy note(s).

There are no material uncertainties about the charity's ability to continue, and so the going concern basis of accounting has been adopted.

Income

All subscriptions and investment income is accounted for when received, except in the case of subscriptions which are specifically stated to be in respect of an ensuing accounting period. No credit is taken for subscriptions unpaid at the balance sheet date.

Expenditure

Expenditure is recognised when there is a legal or constructive obligation to transfer resources to a third party, settlement is probable and the amount can be measured reliably. Expenditure is included within the Statement of Financial Activities on an accruals basis.

Fund Accounting

Unrestricted funds can be used in accordance with the charitable objectives of the Society, at the discretion of the Trustees. Restricted funds can only be used for the particular restricted purposes within the objectives of the Society.

Taxation

The charity is exempt from corporation tax on its charitable activity.

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2021

1 Member's subscriptions

The geographical analysis of subscriptions is as follows:	2021 £	2020 £
United Kingdom	91,604	96,877
Rest of the World	18,518	20,975
	110,122	117,852

2 Debtors

	2021 £	2020 £
Debtors	5,240	20,960
Prepayments	121,178	77,924
ICE Intercompany	19,888	16,064
	146,306	114,948

3 Creditors

	2021 £	2020 £
Purchase Ledger Control Account	6,614	8,187
Subscriptions in advance	32,166	34,092
Accruals	3,980	1,980
Other Creditors	9,818	10,274
Receipts in Advance	240,902	211,902
	293,480	266,435

Within the amount for other creditors BTS are holding £9,818 on behalf of Think Deep UK

4 Employees and Employment costs

The society does not employ staff directly.

5 Unrestricted Funds

	Unrestricted funds £	Restricted funds £	Total Funds £
Fund balances at 31 December 2021 are represented by:			
Current assets	606,394	5,496	611,890
Current liabilities falling due within one year	(293,480)	-	(293,480)
	312,914	5,496	318,410

6 Funds

	Unrestricted funds £	Restricted funds £	Total Funds £
Balance brought forward at 1 January 2021	281,628	10,000	291,628
Net movement in funds	31,286	(4,504)	26,782
Fund balances carried forward at 31 December 2021	312,914	5,496	318,410

7 Restricted Funds

The Doug Allenby Award was estabilshed in 2020, the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory.

8 Committee Members

Committee Members do not and never have received any remuneration.

	2021 £	2020 £
Travel and subsistence expenses reimbursed to committee members (n.b.1 trustees reimbursed in 2021, 2 in 2020)	766	225
	766	225

BRITISH TUNNELLING SOCIETY

England & Wales - Charity number 1017887

Accounts

British Tunnelling Society
Annual Report and Accounts 2020

BTSYM Conference 2019 attendees

Kate Cooksey, BTS Chair
British Tunnelling Society
bts.chair@britishtunnelling.org.uk

Executive Summary

Ring Building on Thames Tideway West

2020 was a year like no other, bringing a pause to many tunnelling projects in the UK and around the world, whilst the industry developed ways of working during a pandemic. Whilst delay impacts were inevitable, such as nine months on the Thames Tideway Tunnel, it did not hinder the spirit of the tunnelling community to find solutions and begin tunnelling again. The industry has also taken the opportunity to accelerate innovative approaches and technologies that allow safe working whilst social distancing and it will be interesting to see how these are continued to be embraced after the pandemic.

Our membership has seen a slight fall in individual membership, balanced by continued growth in UK Corporate membership. There is a continuing slight reduction in overseas members.

The BTS and BTSYM transitioned quickly to online evening lecture delivery via our You-tube channel, only losing one evening lecture in April due to the pandemic. We have had a good range of topics from silica dust control, Historical tunnel construction and the return of the Tideway Update. Our live You-tube hosted events have had a noticeable increase in online viewing, reaching over 10, 000 views for our Harding Memorial Lecture by Dr Keith Bowers.

Sadly our Annual Dinner, Design and Construction Course, Health and Safety Course and Awards Presentations all had to be postponed in 2020. The University of Warwick MSc Tunnelling and Underground Space was also put on pause for the 2020/21 intake.

Progress has continued with the development of the SCL Best Practice Guide and BTS Specification 4th Edition which should both be ready for publication in 2021/ early 2022, along with the CAWG BTS Guide to the WCA Regs sign off in early 2021.

Significant work took place to prepare for the transition of the BTS Website to a new platform and new web address – www.britishtunnelling.com. The upgraded website will be launched in early 2021 and as well as being device friendly it will allow us to expand for Transforming Tunnelling Safety.

Plans for the 50th Anniversary Book continue at pace with the number of stories submitted surpassing our expectations. To take account of the support the publication of the book has been delayed until October 2021 to incorporate all the stories we have to share.

The T&T Editorial Advisory Board have welcomed a new T&TI Editor with George Demetri taking over from Alex Conacher, assisted by Julian Champkin and Keivan Rafie.

Our ICE Funded Hyperloop Project was successfully completed in 2020 with a paper published in ICE Proceedings and a technical report published on the BTS Website.

I would like to thank all the committee for all their support and effort during my first year as Chair, they have thoroughly embraced a different online experience, whilst finding time to help shape approach and delivery of BTS activities throughout 2020. I am incredibly grateful for the passion and enthusiasm of our individual, corporate and committee members and what has been achieved by their voluntary efforts.

Whilst a tumultuous year the future for UK tunnelling is strong and I believe that our Society will continue to flourish and make a very significant contribution to that workload.

Kate Cooksey

BTS Chair

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1. BTS Committee

Chair: Kate Cooksey, Morgan Sindall
Vice Chair: Rod Young, Barhale Construction
Immediate Past Chair: Ivor Thomas, BAM Nuttall

Elected Members and Trustees

Name	Company	Term	Responsibility
Rod Young	Barhale Construction	Retired 2020	Training and Courses
Martyn Noak	Jacobs	Retired 2020	Communications
Rosa Diez	Mott MacDonald	Retired 2020	
Neil Moss	Gall Zeidler Consultants	Retired 2020	Awards, Technical
John Corcoran	Thames Tideway	Retires 2021	Events
Benoit Jones	Inbye Engineering	Retires 2021	Technical
Brian Lyons	Dr Sauer and Partners	Retires 2021	Awards
Sarah Langley	Sika Ltd	Retires 2022	Communications
Chris Pressdee	Construction Industry Research and Information Association	Retires 2022	Education
Ignacio Castillo	Skanska	Retires 2022	
Alastair Smith	Jacobs	Retires 2023	
Christoph Eberle	Mott MacDonald	Retires 2023	
Jérôme Furge	Bouygues Travaux Publics	Retires 2023	
Mehdi Hosseini	London Bridge Associates	Retires 2023	

Co-opted Members:

Name	Company	Responsibility
Ken Spiby	London Bridge Associates	Website, 50th anniversary celebrations
Eddie Woods	Consultant	T&TI Editorial Advisory Board
John Scholey	CH2MHill	Annual Dinner
Paul Perry	Hewson Consulting Engineers Ltd	BGA, PHEW Liaison
Wojciech Markowski	Arup	Young Members Chair (From 4 November 2019)
Divik Bandopadhyaya	London Bridge Associates	Young Members Chair (From 5 November 2020)
Shani Wallis	Journalist	Media Relations and Publishing
Damian McGirr	COWI Holding A/S	ITA Affairs
George Demetri	Compelo	Tunnels and Tunnelling magazine
Roger Bridge	Balfour Beatty	Education, Think Deep
Anita Wu	London Bridge Associates	Website
Mark Leggett	Mott MacDonald	Conference, Education, APGGI
Neil Moss	Gall Zeidler Consultants	

Institutional Representatives:

Name	Company	Responsibility
Andy Flowerday	Barhale	Pipe Jacking Association
Bill Grose	Independent	Institution of Civil Engineers, APPGI, ITIG
Alan Bozeat	Hunter Personnel	Institute of Materials, Minerals, and Mining
Andrew Hindmarch	Mott MacDonald Ltd	Institute of Materials, Minerals, and Mining
Donald Lamont	Hyperbaric & Tunnel Safety Ltd	Health and Safety, Technical

2. Chair's Report

2020 brought an unprecedented year for the world. For the tunnelling industry it saw the temporary pause of many projects, vast delivery from teams working from home and a demonstration of a can do attitude that we must be extremely proud of.

The BTS transitioned quickly to online delivery, hosting its first virtual AGM and evening lecture in May, after only losing one evening lecture in April due to the pandemic. We are incredibly thankful to the BTSYM Chair Divik Bandopadhyaya for hosting and delivering the online evening lectures via our YouTube channel throughout 2020.

I am incredibly thankful to all our speakers who have embraced the online experience giving their time to come and present to us and share their knowledge and experience. Many have made an exceptional additional level of preparation to help make each of our events a success. The wide and varied selection of evening presentations not only showcases what our industry can do but it also continues to be a leading light in the knowledge sharing activities of the ICE and its Associated Societies. It has been fantastic to see the growing level of interest in our events with the increased online presence and our Harding Lecture given by Dr Keith Bowers reaching 10,000 views! Learning from the interest in our 2019 programme we also welcomed back the Tideway project for an update, once again giving an opportunity for younger members on the project to share their experiences so far. We have also been approached by several overseas tunnelling groups about how we have built our online presence and have shared our experience so far helping them to establish their own presence.

After the campaign in 2019 to bring back 'Sausage and Chips' for the BTS Evening Meetings the importance of providing a 'virtual' alternative was a key focus, so by the autumn we had introduced the 'BTS Virtual Bar', giving the opportunity to continue the essence of the BTS after lecture experience. It has been great to see the BTS spirit and community kept alive in these testing times.

However, with sadness, we had to postpone and cancel many of our muchloved events such as the Annual Dinner in May and the Design and Construction Course in July. We are incredibly grateful to many members who supported the BTS by foregoing a refund for the Dinner and holding their bookings for the 2021 Dinner.

The disruption to our calendar has given us time to work on improvements to our courses, fostering links to other tunnelling groups around the world and our communications materials. We have spent the time developing a new BTS Website which we will launch in early 2021 – www.britishtunnelling.com. In addition, we have also spent the time reviewing the BTS Constitution to determine if any future revisions are required, this work will continue through 2021.

Membership numbers have shown a slight decline in individual memberships, balanced by slight growth still in corporate membership. The challenge ahead is still to grow individual membership.

We have also continued with our aim to provide information and guidance with our publications, evening meetings and training courses. The work on our SCL Guide nears completion and publication is imminent, we have been focusing on the BTS Specification 4th Edition making use of a blog that helps gather comments against each of the clauses. We hope to be in a position to launch this in 2021.

Our work on the ICE-funded Hyperloop Challenge was successfully completed in 2020 with a paper published in the ICE Proceedings and a technical report posted on the BTS Website.

Work on the Publication of our 50th Anniversary Book of stories is progressing well and we have taken the decision to delay the release to later in 2021 to align with the BTS Conference, which we have also taken the decision to postpone to autumn 2021. We are overwhelmed by the response from the industry and have increased the size of the book to accommodate as many stories as possible.

The BTS Young Members group continues to grow and were quick off the mark to embrace delivery of online lectures and have taken the opportunity to grow collaboration with other ITAYM member nations including Greece, India, Canada and Brazil. Whilst their annual conference had to be postponed they have focused on social media campaigns and events to continue to support the younger members of the tunnelling industry.

For our members the normal working day saw many changes in 2020, however there were many achievements to be proud of through these testing times. The Thames Tideway Project has seen a number of machine breakthroughs and also launches during 2020. York Potash has been busy tunnelling and shaft sinking and the machines have started to arrive on the HS2 London to Birmingham route. Bank Station Upgrade tunnelling completed in autumn whilst Tunnelling at Hinkley Point continues, and works are progressing for Silvertown Tunnel and National Grid Tunnel in south London. Looking further forward procurement is progressing for Lower Thames Crossing, A303 Stonehenge Tunnel and HS2 Phase 2a. Busy future workload can be seen in further developments of Crossrail 2, the Bakerloo Line extension, the western approach to Heathrow and further extensions to HS2 to the north.

Whilst working remotely the Committee remains active in progressing the ambitions of the Society and I am incredibly grateful for the positivity in approach, as well as all the spare time the committee members provide to make our society what it is.

3. BTS Objectives and Communications

We have reviewed the BTS Objectives and are in the process of upgrading the Communication Strategy with a view of bringing it in line with a rapidly changing digital World.

This past year has seen several controversial requests for the Society to comment and as such we felt that it was necessary to reaffirm the Society's position on what and how to respond.

The primary aims of the Society communication strategy are to:

i. To promote the art and science of tunnelling, including the creation and use of underground space
ii. Inform and advance the education of its members
iii. Influence UK government, clients, and industry
iv. Inform the public.

This communication strategy aims to achieve the following:

- Make the BTS the first port of call and be seen as thought leaders in the industry

- Promote tunnelling as a credible career choice and contribute to the education of tunnellers
- Develop and promote readily available material and intellectual content, promoting best practice, and become the hub for tunnelling knowledge
- Make the BTS the forum for our members discussion, networking, and knowledge sharing
- Inform and influence national and local government, and influence and educate clients

Our list of Media Trained individuals has been reviewed and we plan to compile a new list of "Industry Experts" who can be called upon for their views in response to requests from members where a Society view is deemed inappropriate.

We have updated our full-page advert and it has been published in the last two issues of Tunnels and Tunnelling. Our aim is to build on the fantastic work that is happening with our 50th Anniversary Celebrations and draw on the images and highlights that have been submitted to the Society for our upcoming Book! This will provide us with some excellent images to grab the reader's attention whilst delivering our intended message.

We have looked deeply into the way our membership and our wider audience use social media and have worked with BTSYM to re-establish and expand our social media presence and develop a plan for the future. The number of subscribers on our YouTube channel have soared during 2020 and we have increased our spread across all our intended Social Media platforms.

Thank you again to the members of the team for your time and input.

4. Finance and Membership

This year we retained all of the existing rates and membership fees. The membership rates, per grade, can be seen in the table below.

The membership fee for 2020 again included the provision of a hard copy and digital version of Tunnels and Tunnelling magazine. An agreement has been signed between BTS and T&TI for 5 years (with a 3-year break clause) and a reduced contribution from BTS to the magazine. This provides stability and value for money for a significant period of time.

Grade	UK	Overseas
Corporate Member Small (Up to 50 employees)	£430	£541
Corporate Member Medium (50 to 500 employees)	£685	£935
Corporate Member Large (More than 500 employees)	£1110	£1604
Individual	£85	£138
Retired	£32	£44
UK Student/Apprentice	£20	n/a
Young Member	£42	£53

Membership: The detail of the current membership (at the end of December 2020) is set out below:

	Member Classification	2020	2019	2018	2017	2016	2015	Change 2019/20
UK	Corporate members	88	82	75	71	50	64	+6
	Individual members	414	457	461	446	490	484	-43
	Students and Retired	69	67	76	72	83	87	+2
	Young Members	192	193	199	191	152	90	-1
	Total	**763**	**799**	**811**	**780**	**775**	**725**	**-36**
Overseas	Corporate members	8	8	8	6	6	5	0
	Individual members	101	103	113	133	113	124	-2
	Students and Retired	5	6	7	8	7	8	-1
	Total	**114**	**117**	**128**	**147**	**126**	**137**	**-3**

The change in membership from 2019 has shown a very slight net decrease in total membership. There has been a slight reduction in the number of individual members since 2019. However Corporate memberships continue to show a healthy increase of 6 new UK members and no change Overseas. Overall Overseas memberships continue to decline, which may be indicative of members moving back to UK projects from overseas and exchanging their membership status.

Overall cash reserves increased to £443,115 by the end of 2020, the increase in overall cash reserves is due to sponsorship payments for the BTS @ 50 book, with an improvement in Net Current Assets to £291,628 from £273,624 at the end of 2019. There remain some outstanding debts from one organisation for various historical events that we are confident will be cleared next year

A new restricted fund has been created after a donation of £10,000 was made by the widow of Doug Allenby. The Doug Allenby Award was established in 2020, the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory.

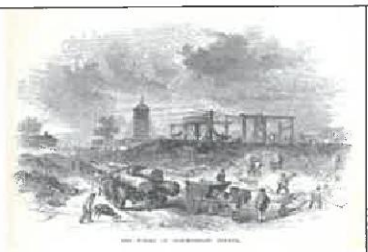
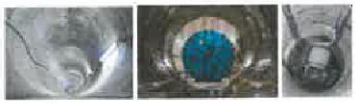
5. Evening Meetings

John Corcoran (Chair), Brian Lyons, Ignacio Castillo Dominguez, Christoph Eberle, Mehdi Hosseini

The year again has seen a full calendar of high-quality presentations covering a wide range of topics. The Committee's and members' thanks go to all the presenters.

The programme of monthly BTS meetings through 2020 were as follows:

Date	Title	Speakers	Photo	Headlines	Attendance
16th Jan 2020	Technical Challenges with Future Tunnels in Norway	MSc Anne Kathrine Kalager Professor Eivind Grøv		Delegation from Norwegian Tunnelling Society on challenges they face	90%
13th Feb 2020	Joint BTS MinSouth meeting West Cumbria Mining	Mark Kirkbride – CEO of WCM		Outline of plans to develop a deep level coal mine off the Cumbrian coast to produce metallurgical coal for the steel industry	75%
12th March 2020	Experimental investigations into the spalling of high strength concrete and the fire performance of tunnel linings	Tom Lennon		Smaller dia fibres work better – You'll need less weight of fibre. Fibres affect concrete flow. Don't always need full-scale seg testing. Sometimes too much is spent on elaborate testing, which may not be necessary.	50%
April 2020	No lecture – Covid 19				
14th May 2020	An industry first collaboration on Silica Dust control in Tunnelling – Australian Tunnelling Society Working group **YouTube**	Kate Cole Keith Bannerman		Tunnelling Society Working Group on how they are managing silica dust in tunnels	

18th June 2020	Historical Tunnel Construction – Building tunnels in the 19th Century **YouTube**	Peter Harris		Fascinating insite into construction of old tunnels and challenges of now maintaining them	350 - live 2600 - views
17th Sept 2020	Hydrophobic & Pore Blocking Ingredient (HPI) for use in Tunnel Construction. **YouTube**	Ken Howes Alistair McDonald		How HPI technology can solve many of the problems associated with waterproofing tunnels.	350
15th Oct 2020	Greenwich Tunnel Boring Machine Delivery **YouTube**	Robert Margariti-Smith Conor McQuade		Highlighted the challenges of transporting extremely heavy/large loads through urban areas.	1900 views
12th Nov 2020	Harding Memorial Lecture – Tunnelling in a changing world	Dr Keith Bowers		The lecture looked at changes affecting our industry and what we may need to do differently now and in the future.	10,000 views
10th Dec 2020	Tideway Update	Andy Alder, Robbie Quinn, Oscar Hueso Cuberos & Mikel Martinez Goirigolzarri		Included Barn Elms shaft & pipejack, Hyperbaric TBM interventions & East Main Tunnel TBM delivery and launch	4,800 views

6. BTS Young Members

Wojciech Markowski (Chair), Alasdair Fraser (Secretary), Divik Bandopadhyaya (Professional Development Sub-Chair; Ciara Maguire (Socials & Media Sub-Chair) and Cate Anthony (Schools and Universities Chair).

In the BTSYM Committee year 2019/21 (spanning November 2019 and October 2020), most in-person activities remained suspended due to the COVID-19 pandemic; with the exception of the months between November 2019 and February 2020. The pandemic also led to the cancellation of the BTSYM Conference 2020 at a short notice. This section is, henceforth, split into two sub sections, viz. "November 2019 to February 2020" and "March to October 2020".

November 2019 to February 2020

During the said period, the Socials & Media Sub-Committee delivered two in-person socials. The first took place on 5th December 2019 to celebrate National Tunnelling Day, whilst the second was themed as the New Year Social (held on 31 January; Figure 6.1).

Additionally, the Professional Development Sub-Committee delivered their first, and only, in-person lecture on 20th February 2020 (see Table 6.1).

March to October 2020

All BTSYM activities from March 2020 onwards were delivered online due to COVID-19.

Figure 6.1 – BTSYM New Year Social, held on 31 January 2020

During this period, the Professional Development sub-committee, at times, through active engagement with other ITAym member nations, delivered 9 lectures (list presented in Table 6.1); however no workshops were held.

Table 6.1 - 2020 Lectures

Date	Lecture Title & *Presenter(s)*	Collaborating Nation	Views†
20 Feb 2020	Tunnel Maintenance, Repair & Improvement *David Hindle (OTB Engineering)*	N/A	1,345
9 April 2020 [1]	Introduction to Tunnel Ventilation *Mark Gilby (WSP)*	N/A	1,590*
21 May 2020 [1]	Tackling Uncertainty in Tunnelling *Vasilis Marinos & Andreas Benardos (National Technical University of Athens)*	Greece (GTSYM)	1,072
23 June 2020 [1]	How to design rubber products to make an immersed tunnel watertight *Nicas van den Brink (Trelleborg Ridderkerk BV)*	India (TAIym)	857
16 July 2020 [1]	Time-Dependent Deformations of Shafts and Tunnels in the Greater Toronto Area *Michael Dutton (Arup)*	TACym (Canada)	3,335
24 July 2020 [1]	Design Approaches to Avoid Problems During TBM Tunnel Execution *Cosimo Iasiello (Ayesa)*	India (TAIym)	2,513
28 August 2020 [1]	Introduction to Emerald Book (FIDIC Conditions of Contract for Underground Works) *Matthias Neuenschwander*	India (TAIym)	738
3 September 2020 [1]	Implementation of Tamoios Highway *Pedro Soares dos Anjos (Construtora Queiroz Galvão)*	Brazil (CBTym)	1,306
28 September 2020 [1]	Lessons Learned as A Trenchless Litigation Expert and Designer *Dr Mark Knight*	TACym (Canada)	498

Note: [1] Webinar † As on 11 February 2020 * Recording Unavailable

These lectures were delivered on BTS' YouTube Channel as live streams; whilst most remain on the channel as recordings for long-term wider public consumption. Building on the lessons learnt from its streams, BTSYM continued supporting BTS' Evening Meetings Sub-Committee to deliver monthly lectures on YouTube.

Focus on online content delivery also enabled BTSYM to substantially expand its social media reach globally; with BTSYM LinkedIn 'company page' follower count reaching 3245, and YouTube subscribers count increasing to 1,157 (a gain of 1,044 subscribers over 365 days).

Figure 6.2 provides an excerpt of geographic location of views (current to 11 February 2020).

Geography	Views ↓
Total	48,281
United Kingdom	10,819
United States	5,735
India	3,689
Australia	1,301
Pakistan	1,044
Canada	1,006
Brazil	898
Saudi Arabia	386
United Arab Emirates	325
Netherlands	313

Figure 6.2 – Number of YouTube views per country (limited to top 10)

BTSYM would like to extend their gratitude to the tunnelling community for their patience and understanding, and continued support during these unprecedented times. Gratitude is also extended to the BTS Committee; Keith Bannerman of ITAYM; Sandeep Nirmal of TAIym; Alex Nowak La Flor of CBTym; Tim Packulak, Madison Kennedy and Michael Dutton of TACym; Dimitrios Litsas of GTSYM; Mark Gilbey of WSP, and all other presenters who readily agreed to deliver the lectures as webinars on YouTube.

7. Awards

Brian Lyons (Chair), Chris Pressdee, Sarah Langley, Anita Wu.

Harding Prize 2020

The Harding Prize was not awarded in 2020 but invitations have been distributed for 2021's Award.

James Clark Medal 2020

The James Clark Medal winner for 2020 was Helen Nattrass. The award was made in recognition of her contribution to the All Party Parliamentary Group for Underground Space (APGUS) and for her long and outstanding contribution to the British Tunnelling Society and the tunnelling industry. The Award presentation has been postponed until it can be presented in person at a BTS Evening Meeting.

James Clark Medal Winners Luncheon 2020

The luncheon was not held in 2020. The 2020 James Clark Medal winner will be invited to the 2021 luncheon planned for October 2021.

Doug Allenby Award

The Doug Allenby Award was established in 2020, the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory. The 1st award will be held at the next BTSYM conference.

8. Education

Chris Pressdee (Chair), Kate Cooksey, Ivor Thomas, Mark Leggett, Benoit Jones, Christoph Eberle, Mark Leggett, Roger Bridge, Wojciech Markowski.

MSc Course

The MSc Tunnelling and Underground space moved quickly to online delivery from March with the students completing their year with the project presentations in September, albeit virtually for the first time. A group of 7 full-time students worked together on their Group Design Project which was a proposal for an underground freight line into central London. The BTS was very impressed with how well they worked together to develop their proposals even while working remotely from each other.

In August the University of Warwick took the decision to pause the MSc for delivery of the 2020/21 year, due to the uncertainty of delivery of an in person lecture experience. The BTS Steering Board supported this decision on the basis that a series of short CPD courses would be introduced through early 2021 to provide educational opportunities in tunnelling. Increased focus has been put on promoting the course and addressing any improvements to the course that can be made before relaunch in autumn 2021.

MSc Course – BTS Bursary

The BTS did not award a bursary in 2020 due to the pause in the MSc Tunnelling and Underground Space at Warwick University. Applications have opened again in 2021. 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.

9. Training and Courses

Rod Young (Chair), Benoit Jones, Sarah Langley, Alastair Smith, Jerome Furge, Mehdi Hosseini, Anita Wu.

BTS Tunnel Design and Construction Course

The twelfth Tunnel Design and Construction course was to be held at Warwick University from 6th July to 10th July 2020. But due to the Covid pandemic unfortunately the course was cancelled, this has also had to occur for the 2021 planned course.

The 2022 course will be held from 4th to 8th July and will once again be held at Warwick University.

BTS Underground Health and Safety Course

The annual BTS Underground Health and Safety Course to be held at the ICE on 23rd and 24th November 2020, was also cancelled due to the Covid pandemic.

The 2021 Course dates will be at the ICE in London on 22nd and 23rd November.

Tunnel Survey Course

No Tunnel Survey Courses were arranged during 2020 due to the Covid pandemic.

All three courses rely totally on the time and effort given by the presenters outside of their day job and the help and understanding of their parent companies.

10. TunnelSkills

(Rod Young reporting)

CITB Immersive Learning

The CITB Immersive Learning project kicked off in February 2019, using awarded funding of £249,000. The range of products to be developed is progressing well :

- VR Classroom content and scenarios, desktop option being developed
- AR HoloLens application

- VR Cube Scenario – 4 applications have been developed
- Library of 3D content and assets for the TUCA VR Platform
- VR Promotional Game

Tunnelling Operative Trailblazer Apprenticeship

Due to the Covid pandemic the current cohort were put on hold for most of 2020.

9 Apprenticeships have now completed, 1 having being nominated for Young Tunneller but unfortunately didn't win. End Point Assessment was developed and Functional skills developed in 2021. A replacement for the provider Dudley College is being arranged. A further cohort is planned for 2021.

Trainee Assessor Program

Due to the high volume of major tunnelling projects that are currently underway in the UK the group recognises that there needs to be an increase in assessor numbers. The main difficulty is finding the right candidate that has the ability, time and importantly the desire to fulfil an assessor role on site. 4 assessors have undertaken the course in 2020, 2 completed & 2 nearly completed, the courses funded by TunnelSkills.

TUCA

Further development on the new TUCA format continued through 2020.

11. Health and Safety and Standards

Donald Lamont

Safety; Standards; Codes

CEN/TC151/WG4 – WG4 met five times during 2020 – once face to face and four times by Zoom. Progress continued on the revision of ENs 12110 and 16191. By the end of 2020 the technical content of EN 12110 Part 1 was around 95% complete and initial formatting and editing had been undertaken. The technical content of Part 2 of EN 12110 was around 90% complete. By the end of 2020 the revision of the technical content of the existing text of EN 16191 had been 90% completed and work was underway on additional material to be included in the standard such as on automation and remote control.

Multi Service Vehicles – a first draft of a standard for MSVs was under preparation by France for presentation to the WG in early 2021.

Refuge chambers – work on a standard for refuge chambers was put off till late 2021 due to lack of resources.

BS 6164:2019 – no major issues arose with this standard during its first year in use.

BTS CAWG – CAWG met once by Zoom. The revision of the BTS Guide to the WCA Regs progressed slowly to allow it to take account of ongoing work on the revision of EN 12110. At the end of 2020 revision of the BTS Guide was around 99% complete in anticipation of being signed off by CAWG early in 2021.

12. Technical Sub-Committee

Dr Benoit Jones (chair from May 2020 onwards), Brian Lyons, Christoph Eberle, Jérôme Furge, Mehdi Hosseini, Neil Moss (chair up to May 2020, then co-opted), Dr Donald Lamont (co-opted).

The Technical Sub-committee is working on the following principal topics which are summarised below:

SCL Best Practice Guide

The SCL sub-committee continued to work on the SCL Best Practice Guideline throughout 2020. The design guide has been copy-edited and is almost ready for publication. Publication is anticipated in 2021.

BTS Specification 4th Edition

After receiving comments on the previous edition via the blog, the committee has begun revising the text in earnest. Publication of the 4th Edition is anticipated in late 2021/early 2022.

13. APPGI

Bill Grose (Chair); Kate Cooksey; Mark Leggett; Ivor Thomas.

The All-Party Parliamentary Group for Infrastructure (APPGI) is run jointly by the ICE and the BTS, having merged the BTS's APPG on Underground Space (APGUS) several years ago in order to focus Parliamentarians on fewer overlapping All-Party groups.

This enables BTS to concentrate on site visits and projects and initiatives of interest to its members and parliamentarians whilst leaving the administration of the Group and broader ICE policy aims to the institution's Public Affairs department to manage.

The stated aim of the group is to "highlight the importance of infrastructure, engineering and the use of underground space to the economy and society, and to hear from experts and discuss matters arising."

Moving the meetings from late afternoon to 8:30am in 2019 increased attendance from Parliamentarians and the meetings were held frequently enough to have gained some momentum.

There were no meetings during 2020 as a consequence of COVID-19 restrictions.

14. Website

Anita Wu (Chair), Ken Spiby, Alastair Smith, Shani Wallis.

BTS Website

Anita Wu (Chair)

The new-look BTS website will be launched in February 2021. The old website has been in its current format since late January 2014 and it has grown considerably since that time. However, the old website structure looks its age, has its limitations and is not device friendly. A proposal for a new website was put forward in 2019. In 2021, to complement the BTS 50th anniversary celebrations, the BTS will launch a new website with a new domain. The new website is www.britishtunnelling.com. The BTS emails have also been upgraded to the new domain.

Please visit the website for further details.

Evening meetings, conferences, training courses and news are regularly updated with archive meetings available to watch online https://britishtunnelling.com/events/evening-meetings-archive.

Information on BTS publications and a suggested reading list are under the knowledge section of the website. The content for sustainability has also been expanded https://britishtunnelling.com/knowledge/sustainability.

The website content has continued to expand for Transforming Tunnel Safety (TTS) https://britishtunnelling.com/tts/transforming-tunnel-safety to encourage knowledge sharing of lessons learnt, best practice guidance and safety videos on tunnelling projects.

In developing the new website, we have changed to a free hosted site, which significantly reduces the ongoing costs (such that the new site will prove more economical than the old after just 3 years), whilst also permitting us a greater freedom of page set-up. The payment platform has been upgraded from the old site.

Tunnels Database

Ken Spiby (Chair)

The tunnels database is still not available to Members or the public. It has not been possible to get access to work reliably with the current database structure.

Further work on the database has been stopped pending the completion of the new website. Once this is operational, the plan is to build a new database onto this, with the required functionality built-in at the outset.

15. 50th Anniversary

Working Group: Ken Spiby (Chair), Sarah Langley, Jon Corcoran, Anita Wu, Divik Bandopadhyaya
General "BTS at 50 Sub-committee" as above plus Ivor Thomas, Mark Leggett, Shani Wallis

The BTS will celebrate its 50th Anniversary in March 2021 and the Committee wishes that this does not pass by unnoticed. Plans include:

- A book: "Tunnelling Tales: Fifty years of the British Tunnelling Society"
- A commemorative edition issue of T&T in March 2021
- A two-day Conference. Originally planned for March 2021, this has been postponed to the end of Sept 2021 due to COVID restrictions. It is possible that the date may need to be postponed again
- An out-reach / education programme making use of the new book to visit schools and universities (A BTSYM initiative)

Progress with the book has been good, but slow. Interest in the book is much higher than was anticipated and around 3 times the intended number of words have been produced by a large number and variety of contributors.

The target is now to publish in October 2021, with pre-ordering available from July.

16. T&T Editorial Advisory Board

Eddie Woods (Chair), Kate Cooksey, Roger Bridge, Mark Leggett, Andrew Smith, Ken Spiby, Ivor Thomas, Donald Lamont, Darren Page, Dave Terry, Benoit Jones, John Corcoran, Petr Salak, Rosa Diez, Rashik Bhanderi, George Demetri, Wojciech Markowski (BTSYM).

As with everything about 2020 the editorial board was no exception. It has been a tumultuous year with the Editor Alex Conacher, North America Editor Nicole Robinson and Paola De Pascali leaving T&TI and his two journalists Nichola and Paula leaving T&TI in April.

George Demetri took over from Alex assisted by Julian Champkin and Keivan Rafie.

The new Editorial staff have been locked out of their offices in London and have been home working. It cannot have been easy but they have managed to keep the magazine going. The Editorial Board have liaised with the Editor and have been consulted over the period.

The conclusion of the review was that the magazine in general is thinner, there are significantly less advertisements, but that the standard of the small number of articles is high. The aim of the next editorial board meeting will be to obtain a forward view of what features are planned including the "rule of thumb" series. Whilst the concept of these was applauded the content required considerable improvement.

The editorial board would like to thank George for stepping into the breach in such difficult times for all of us and look forward to a brighter working partnership in the coming year.

17. International Tunnelling Association

Damian McGirr (Chair), Donald Lamont, Shani Wallis

The WTC and General Assembly was unfortunately postponed in 2020 in Malaysia due to the global pandemic. This was a very tough and troublesome year for all involved with the ITA family. There was much debate, discussion and annoyance in many quarters on the manner in which the postponement and refunding was handled. A virtual WTC was eventually held in September 2020 in Kuala Lumpur together with virtual General Assembly. This was a first for ITA.

The host nation for 2023 was due to be selected in the virtual GA. However, this was postponed as ExCo proposed that there would be additional requirements introduced for hosting the WTC in future and the vote between Turkey and Greece should be postponed to an emergency GA in February 2021. The proposal for "new rules" for hosting the WTC is welcomed by the BTS and we have fully engaged in the review process for this. The intent of ExCo for the new guidelines is that the ownership of WTC will come more under ITA control rather than the host country. This is something that has been suggested for some time and there will be much more before this is finalised.

Other ITA publications can be viewed at https://about.ita-aites.org/publications

The WTC for 2021 has already been postponed and will now take place in Copenhagen in 2022. However there will still be a Virtual General Assembly in June 2021.

Working Groups

- Working Group 2: Research
- Working Group 3: Contractual Practices
- Working Group 5: Health and Safety in Works
- Working Group 6: Maintenance and Repair
- Working Group 9: Seismic Effects
- Working Group 11: Immersed and Floating Tunnels
- Working Group 12: Sprayed Concrete Use
- Working Group 14: Mechanized Tunnelling
- Working Group 15: Underground and Environment
- Working Group 17: Long Tunnels at Great Depth
- Working Group 19: Conventional Tunnelling

- Working Group 20: Urban Problems, Underground Solutions
- Working Group 21: Life Cycle Asset Management
- Working Group 22 : Information Modelling in Tunnelling

COMMITTEES

- ITACUS (Underground Space)
- ITA Tech (technical documentation)
- ITACET (Education and Training)
- ITACOSUF (Operational Safety of Underground Facilities)

18. Annual Dinner

John Scholey (Chair), Kate Cooksey, John Corcoran, Roger Bridge, Shani Wallis.

Although tickets for the Society's 32nd annual dinner in May 2020 went on sale from 1st February, by mid-March it became increasingly clear that the event could not be held because of the Covid-19 Pandemic. By that time, we had received 46 bookings representing 474 covers. Each applicant was offered the choice of a refund or deferring their booking to May 2021; most chose to defer.

At the time of writing, we remain unable to hold the event in May 2021 so the next annual dinner will be in May 2022.

In the absence of a dinner either this or last year, members can at least revisit the delights of past dinners in the form of the photo galleries hosted by Tunnel Talk (see https://www.tunneltalk.com/BTS-Dinner-image-galleries.php?year=2019 for the gallery from the last dinner, in 2019, together with links to those of previous years).

19. Institution of Civil Engineers

Bill Grose

The BTS continues to enjoy a close and positive relationship with ICE. As one of the largest and most active of the ICE's Associated Societies the BTS 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.

A change in the financing arrangements in 2018 encouraged us to focus more on technical projects and to seek funding assistance from the ICE Enabling Fund. One project has been funded (Hyperloop Challenge) and others are under consideration. This involves working closely with the Vice President for Learned Societies.

ICE regularly refers tunnel-related media queries to BTS committee members and rely on our advice and expertise in such matters. These referrals have resulted in senior BTS members appearing on TV (for example ITN News on the tunnels under Euston Square being dug by HS2 protestors) on radio and reported in the national and local press.

The ICE-funded Hyperloop Challenge was successfully completed in 2020 with a paper published in the ICE Proceedings and a technical report posted on the BTS website.

BTS and ICE continue to jointly run the All Party Parliamentary Group for Infrastructure.

20. BGA Liaison

Paul Perry

This year has been a challenging one for all, although like the BTS, BGA have seen a growing attendance from online participation at their evening meetings. It is a keen debate as to whether this represents the new normal!

The BTS continued its rewarding liaison with the BGA in the year with several initiatives including assisting CIRIA with their report on Geotechnical Baseline Reports and the discussions relating to a new publication on Tunnel Asset Management.

Paul Perry, a member of BTS committee regularly attends BGA meetings and forms the link in communication between the two groups. We look forward to a fruitful coming year.

21. Reserves Policy

The Trustees policy for reserve is for there to be the equivalent of 6-12 months expenditure, this will ensure sufficient funds will be available to meet the needs of the Society. BTS reserves at the end of 2020 is £291,628. The current reserve of £291,628 exceed the amount require as per the policy. BTS will review the reserve in 2021.

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 overleaf was approved by the Committee and was signed on its behalf by:

Ms Kate Cooksey
Chair of the British Tunnelling Society

Date of Approval: K Cooksey 20/1/22

22. Legal and Administrative Information

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.

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	CCLA Investment Management Limited
Strand Branch	St. Alphage House
PO Box 414	2 Fore Street
38 Strand	London
London WC2H 5JB	EC2Y 5AQ

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.

23. 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 2020. The financial statements have been prepared on the accounting policies set out in 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. Ten members of the Committee are elected by electronic/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 Chair 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 Chair's term of office, they 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 and 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 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.
- 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 the above aims.

Administration of the Society

The business affairs of the Society are administered by a committee consisting of ten elected members, several co-opted and ex officio members together with a representative from the Institution of Civil Engineers, the British Geotechnical Association, the International Tunnelling and Underground Space Association, the Institute of Materials, Minerals and Mining and the Pipe Jacking Association.

The 2020 AGM saw vacancies arise in the Committee, due to the retirement of elected members. This year 4 BTS members were duly elected to serve from the 2020 AGM for a period of three years. They were: Alastair Smith, Christoph Eberle, Jérôme Furge and Mehdi Hosseini.

In addition, the Committee requested that Eddie Woods, Anita Wu, Donald Lamont, Shani Wallis, Ken Spiby, Roger Bridge and John Scholey continue their roles as co-opted members of the Committee,

which they agreed to do and welcomed Neil Moss remaining on the Committee this time as a co-opted rather than elected member. Mark Leggett was also co-opted onto the Committee now that his position of ex chair had expired. George Demetri was co-opted onto the Committee as the new T&T representative, following Alex Conacher's move to another post. Wojciech Markowski took on the responsibility of the Young Members' Chair in 2019, followed by Divik Bandopadhyaya in 2020. 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.

24. Independent Examiner's Report to the Trustees of the British Tunnelling Society

I report to the Trustees on my examination of the accounts of the charity for the year ended 31 December 2020, which are set out on pages 26 to 30.

Responsibilities and basis of report

As the charity trustees of the Association, you are responsible for the preparation of the accounts in accordance with the requirements of the Charities Act 2011 ('the Act').

I report in respect of my examination of the Trust's accounts carried out under section 145 of the 2011 Act and in carrying out my examination I have followed all the applicable Directions given by the Charity.

Independent examiner's statement

I have completed my examination. I confirm that no material matters have come to my attention in connection with the examination giving me cause to believe that in any material respect:

1. accounting records were not kept in respect of the Trust as required by section 130 of the Act; or
2. the accounts do not accord with those records; or
3. the accounts do not comply with the applicable requirements concerning the form and content of accounts set out in the Charities (Accounts and Reports) Regulations 2008 other than any requirement that the accounts give a 'true and fair view which is not a matter considered as part of an independent examination.

I have no concerns and have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Jonathan Healey FCA
Lindeyer Francis Ferguson Limited
Chartered Accountants
Tonbridge, Kent

Date 11 March 2022

BRITISH TUNNELLING SOCIETY
STATEMENT OF FINANCIAL ACTIVITIES
(INCLUDING INCOME AND EXPENDITURE ACCOUNT)
FOR THE YEAR ENDED 31 DECEMBER 2020

	2020 Unrestricted funds	2020 Restricted funds	2020 Total funds	2019 Total funds
INCOME FROM	£	£	£	£
Charitable activities:				
Subscriptions	117,852	-	117,852	113,492
Income from other trading activities:				
BTS Course & Annual Dinner	-	-	-	192,092
Royalties & Sales	1,087	-	1,087	-
Underground Health & Safety Course	-	-	-	8,175
BTS Young Members Conference	-	-	-	6,343
Grant - Hyperllop Challenge (R & D)	7,500	-	7,500	26,900
BTS Soriee	-	-	-	-
Sundry Income	264	-	264	750
Sponsorship	889	-	889	800
Doug Allenby Award	-	10,000	10,000	-
Investments:				
Interest	165	-	165	435
Total Income	127,757	10,000	137,757	348,987
EXPENDITURE ON				
Charitable activities				
Postage	28	-	28	112
Printing, stationery and photocopying	27	-	27	156
Meeting Expenses and secretarial	15,970	-	15,970	18,941
Subscriptions to other bodies	1,120	-	1,120	1,803
Other costs	1,507	-	1,507	1,975
Publicity	883	-	883	0
Website	13,272	-	13,272	9,599
Award & Prizes	-	-	-	1,577
Grant	12,000	-	12,000	17,000
Training	-	-	-	5,346
Hyperloop Challenge (R & D)	14,400	-	14,400	15,000
Professional fees	4,162	-	4,162	2,626
	63,369	-	63,369	74,135
Expenditure on raising funds				
Expenses re course and dinner	12,450	-	12,450	134,911
Publications	41,544	-	41,544	39,816
Underground Health & Safety Course	1,730	-	1,730	8,486
General Function Expenses	434	-	434	6,161
Young Members Committee	226	-	226	136
BTS Young Members Conference	-	-	-	5,444
	56,384	-	56,384	194,954
Total expenditure	119,753	-	119,753	269,089
Net income and net movement in funds	8,004	10,000	18,004	79,899
RECONCILIATION OF FUNDS				
Fund balances brought forward 1 January 2020	273,624	-	273,624	193,725
Fund balances carried forward at 31 December 2020	281,628	10,000	291,628	273,624

The statement of financial activity includes all gains and losses in the period.

All income and expenditure derives from continuing activities.

BRITISH TUNNELLING SOCIETY
BALANCE SHEET
AS AT 31 DECEMBER 2020

	Notes	2020 £	2019 £
CURRENT ASSETS			
Debtors	2	114,948	80,905
Short term deposits		62,583	62,580
Cash at bank		380,532	191,835
		558,063	335,320
CURRENT LIABILITIES			
Creditors: Amounts falling due within one year	3	266,435	61,696
NET CURRENT ASSETS		291,628	273,624
INCOME FUNDS			
Unrestricted	6	281,628	273,624
Restricted	6	10,000	-
		291,628	273,624

The notes on page 28 to 30 form part of these financial statements.

Approved by the committee on 20/1/22 and signed on its behalf by:

Kate Cooksey - Chair

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2020

Accounting Policies

Accounting Convention

The financial statements have been prepared in accordance with the Financial Reporting Standard 102 (effective January 2019) (FRS 102) and the requirements of the Statement of Recommended Practice (SORP) applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2019) (Charities SORP FRS 102).

The British Tunnelling Society meets the definition of a public benefit entity under FRS 102. Assets and liabilities are initially recognised at historical cost or transaction value unless otherwise stated in the relevant accounting policy note(s).

There are no material uncertainties about the charity's ability to continue, and so the going concern basis of accounting has been adopted.

Income

All subscriptions and investment income is accounted for when received, except in the case of subscriptions which are specifically stated to be in respect of an ensuing accounting period. No credit is taken for subscriptions unpaid at the balance sheet date.

Expenditure

Expenditure is recognised when there is a legal or constructive obligation to transfer resources to a third party, settlement is probable and the amount can be measured reliably. Expenditure is included within the Statement of Financial Activities on an accruals basis.

Fund Accounting

Unrestricted funds can be used in accordance with the charitable objectives of the Society, at the discretion of the Trustees. Restricted funds can only be used for the particular restricted purposes within the objectives of the Society.

Taxation

The charity is exempt from corporation tax on its charitable activity.

BRITISH TUNNELLING SOCIETY
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 31 DECEMBER 2020

1 Member's subscriptions

The geographical analysis of subscriptions is as follows:

	2020	2019
	£	£
United Kingdom	96,877	92,815
Rest of the World	20,975	20,677
	117,852	113,492

2 Debtors

	2020	2019
	£	£
Debtors	20,960	46,295
Prepayments	77,924	18,804
ICE Intercompany	16,064	15,806
	114,948	80,905

3 Creditors

	2020	2019
	£	£
Purchase Ledger Control Account	8,187	11,108
Subscriptions in advance	34,092	31,100
Accruals	1,980	3,950
Other Creditors	10,274	15,538
Receipts in Advance	211,902	-
	266,435	61,696

Within the amount for other creditors BTS are holding £10,274 on behalf of Think Deep UK

4 Employees and Employment costs

The society does not employ staff directly.

5 Unrestricted Funds

	Unrestricted funds	Restricted funds	Total Funds
	£	£	£
Fund balances at 31 December 2020 are represented by:			
Current assets	548,063	10,000	558,063
Current liabilities falling due within one year	(266,435)	-	(266,435)
	281,628	10,000	291,628

6 Funds

	Unrestricted funds	Restricted funds	Total Funds
	£	£	£
Balance brought forward at 1 January 2020	273,624	-	273,624
Net movement in funds	8,004	10,000	18,004
Fund balances carried forward at 31 December 2020	281,628	10,000	291,628

7 Restricted Funds

The Doug Allenby Award was established in 2020, the funds are to be used to award a medal to a young tunneller (BTSYM) annually in Doug's Memory.

8 Committee Members

Committee Members do not and never have received any remuneration.

	2020	2019
	£	£
Travel and subsistence expenses reimbursed to committee members (n.b.2 trustees reimbursed in 2020, 3 in 2019)	225	1,222
	225	1,222