

# Annual Review

## 2021





Image – The Viper Elevated Walkway

# Welcome



Ours is one of the world's oldest professions. The fundamentals of physics have not changed; however there is no escaping the constant change and innovation in the art and science of structural engineering.

The Institution of Structural Engineers exists to help make sense of that change, so that the public can trust that the infrastructure and buildings they use every day are safe.

We support the development of students and young engineers at the early stages of their careers and our examinations test the competence of those seeking professional recognition. Our ongoing programme of activities helps our members to continue their professional development at every stage of their career.

Public safety is at the heart of our values. We achieve this through the demanding technical and ethical standards we set and the conduct we expect of our members.

2021 has been a year of tremendous challenge around the globe and our extensive international network of members - alongside relationships with like-minded organisations - enables a sharing of best practice. Embracing digital technologies creates better linkages for our members, wherever in the world they are, and with it we break down silos and other barriers to learning.

The climate emergency is profoundly challenging the profession. Structural engineers, perhaps more than any other built environment profession, have a direct impact on embodied carbon resulting from their designs. IStructE is a world leader in helping engineers tackle these issues.

Please step inside and learn a little more about IStructE and visit our website at [www.istructe.org](http://www.istructe.org) to see just some of the available resources and find out more about our members.

## Martin Powell

Chief Executive

“ Public safety is at the heart of our values. ”

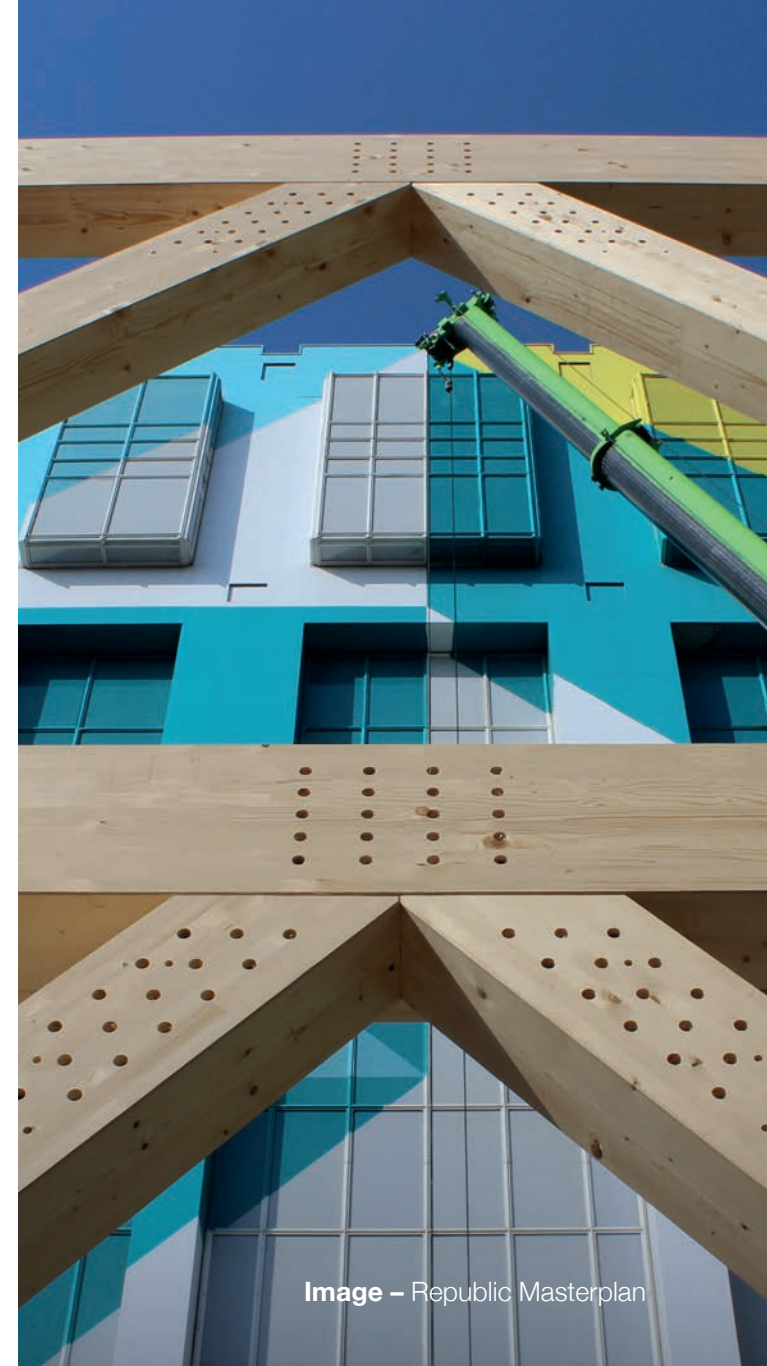


Image – Republic Masterplan

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# About us

The Institution is the world's largest international membership organisation dedicated to structural engineering. We are a charity established by Royal Charter, accountable to our Board of Trustees and advised by an elected Council. We are proud of our heritage but have our sights firmly set on the future as we support structural engineers worldwide.

Professional membership is a leading global benchmark of competence and technical excellence. Members undergo rigorous technical assessment. We support them in this through career-long development and learning.

We provide a voice for our members, promoting their contribution to society as innovative, creative problem solvers and the guardians of public safety. We recognise both the breadth and depth of the needs of our members. We help engineers come together and share knowledge and ideas in various ways, including face to face events, digital platforms and social media.

We are inclusive. No one with the aspirations and ability for a career in structural engineering should encounter any barriers. We constantly review our routes to membership to provide flexibility in the application and examinations process, offering more choice for all our candidates.

## Our principles

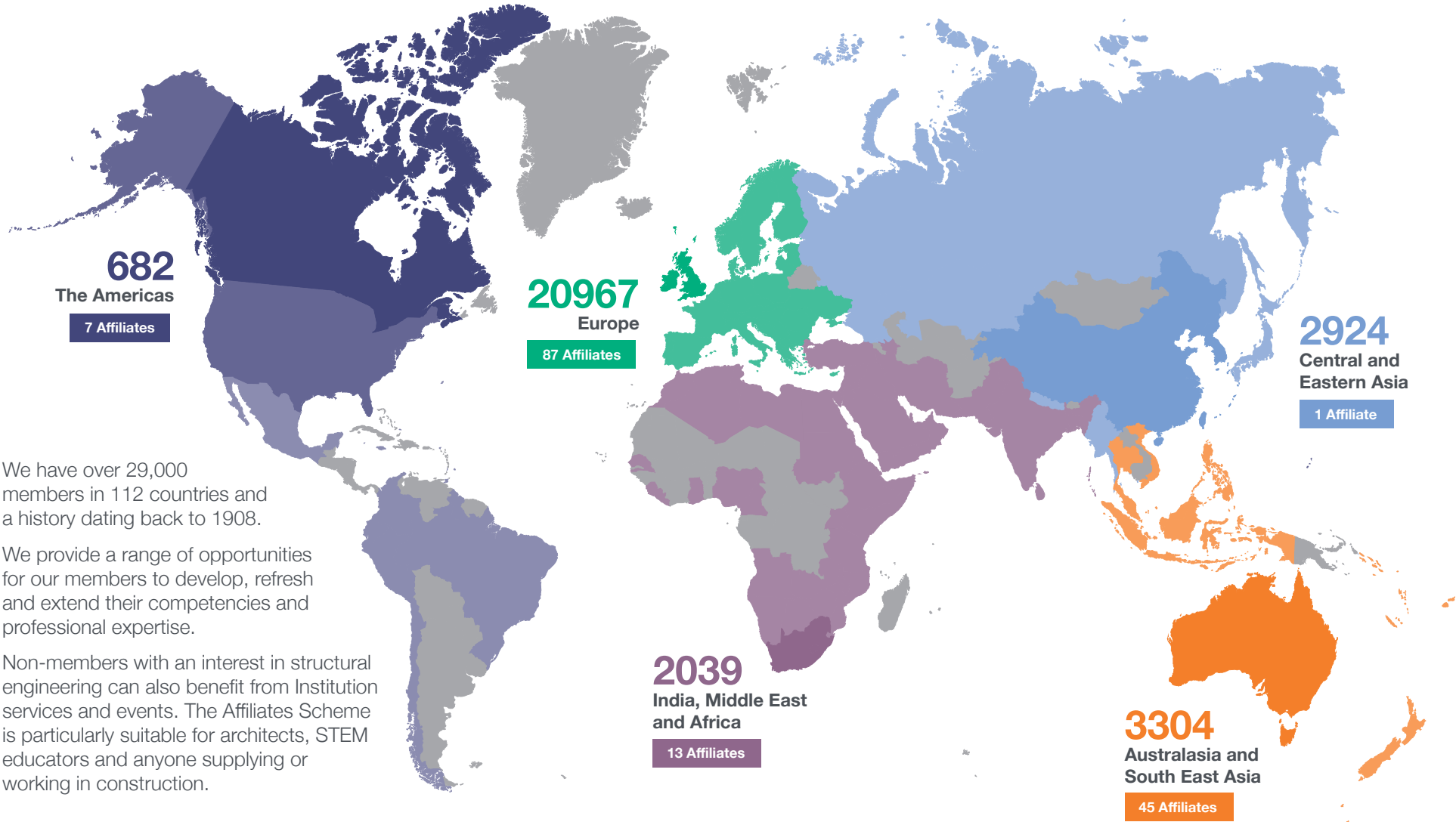
- We are committed to exemplary **professional standards**
- We **respect** our members
- We **champion** the profession
- We are passionate about a **sustainable** built environment for all
- We are **inclusive**
- We **recognise** and **celebrate** the most talented structural engineers
- We are **collaborative**
- We are truly **international**



Image – York House

# Worldwide membership

Countries where the Institution has most members are represented on this map in the darkest shades.



We have over 29,000 members in 112 countries and a history dating back to 1908.

We provide a range of opportunities for our members to develop, refresh and extend their competencies and professional expertise.

Non-members with an interest in structural engineering can also benefit from Institution services and events. The Affiliates Scheme is particularly suitable for architects, STEM educators and anyone supplying or working in construction.



# 29916

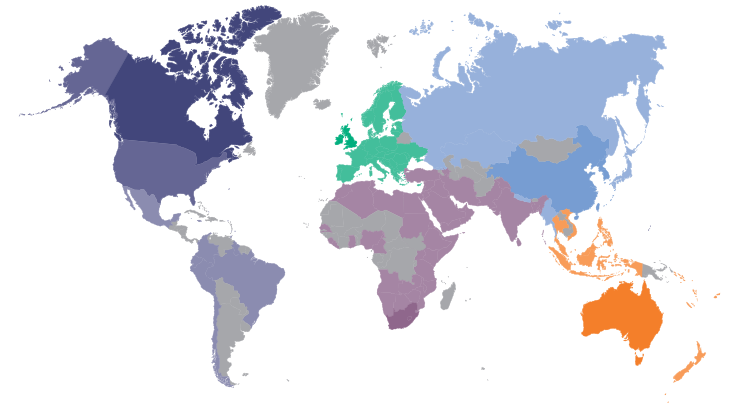
total members and affiliates



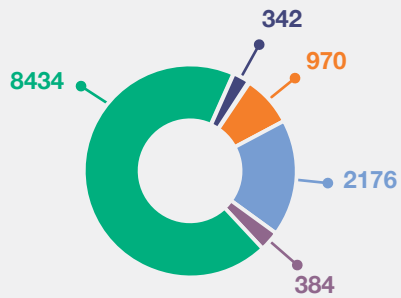
**24993**  
male members



**4622**  
female members  
(15.5% of membership)

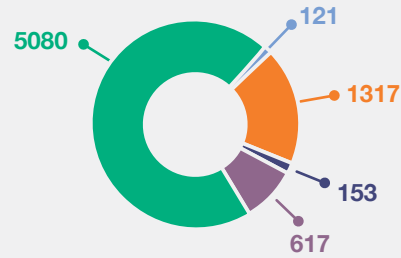


## Member grade by region



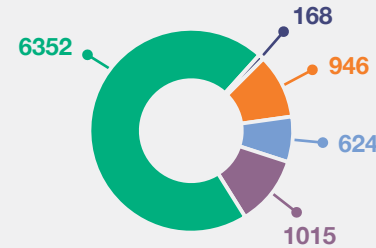
**12306**

chartered members  
(Fellows, Members and Associates)



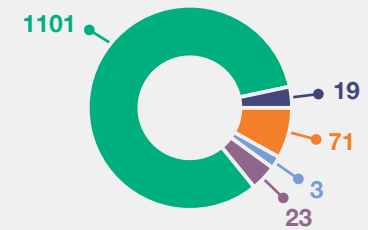
**7288**

student members



**9105**

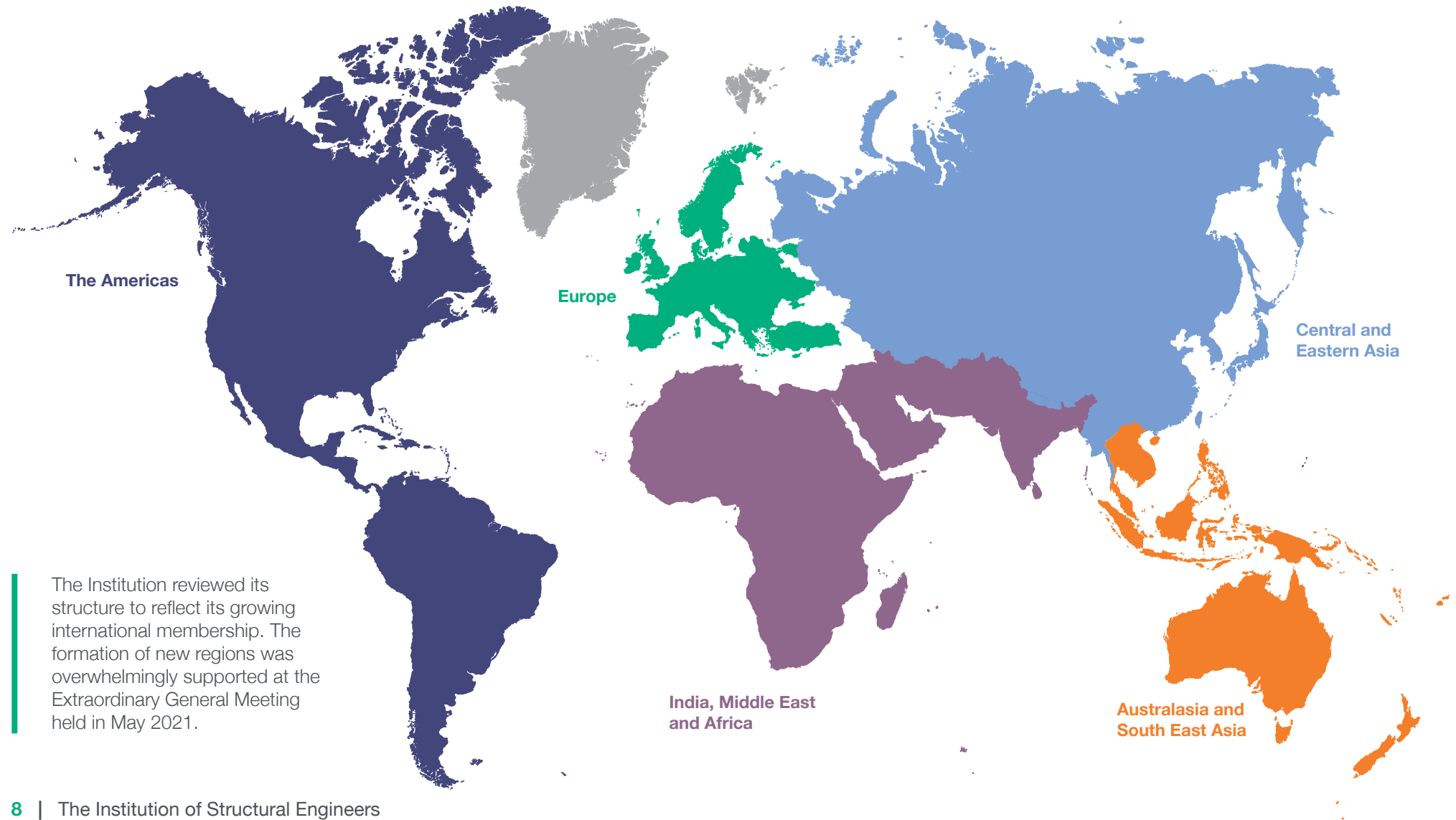
graduate members



**1217**

other members  
and affiliates

# An international Institution












The Institution reviewed its structure to reflect its growing international membership. The formation of new regions was overwhelmingly supported at the Extraordinary General Meeting held in May 2021.






# Trustee Board Members 2021



## Europe

<b>Peter Terrell</b> 	<b>Victoria Martin</b> 	<b>Joe Kindregan</b> 
<b>Matt Byatt</b> 	<b>Simon Pitchers</b> 	<b>Don McQuillan</b> 
<b>Jane Entwistle</b> 	<b>Charlotte Wildman</b> 	<b>Toby Robinson</b> 

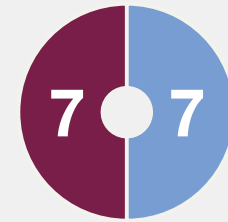
## India, Middle East and Africa

<b>Mohamad Al-Dah</b> 	<b>Ashutosh Nene</b> 	<b>Marelize Visser</b> 
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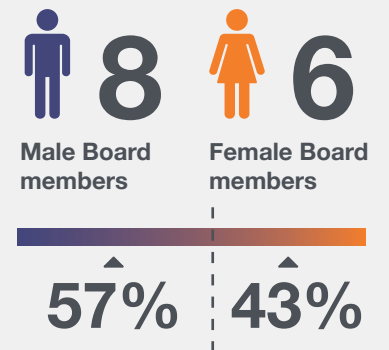
## The Americas

<b>Shalini Jagnarine-Azan</b> 	<b>Tanya de Hoog</b> 
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## IStructE Board statistics



- Board members based in the UK
- Board members based outside the UK



# Professional Code of Conduct, the essential differentiator

Our members are held in high professional regard – and rightly so. Competence, integrity and fairness sit at the heart of our values; our members uphold these standards every day in the work they do. It is this that sets them apart from other structural engineers. The Institution's Code of Conduct lays out the standards in eight Articles:

## The eight Articles of the Code of Conduct

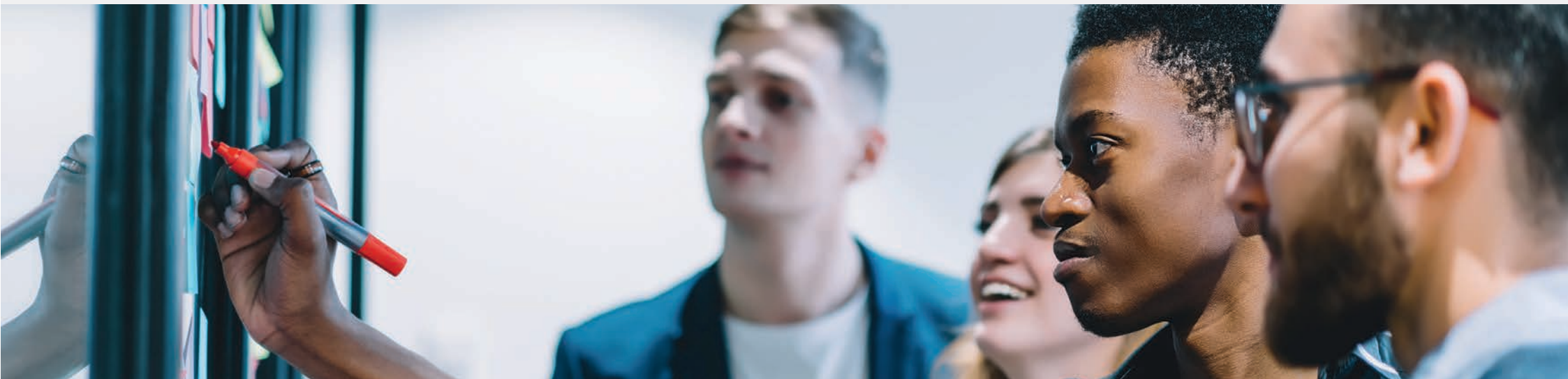
### Members shall:

1. act with integrity and fairness and in accordance with the principles of ethical behaviour;
2. have regard to the public interest as well as the interests of all those affected by their professional activities;
3. uphold the reputation of the profession;
4. maintain and broaden their competence and, where appropriate, assist others to do so;
5. undertake only those tasks and accept only those appointments for which they are competent;
6. exercise appropriate skill and judgement;
7. not maliciously or recklessly injure or attempt to injure the reputation of another person;
8. avoid conflicts of interest.

These Articles set the benchmark for professional and ethical behaviour. It is vital that the public has trust in the profession. Members maintain that trust by providing their services with professional excellence, integrity, fairness, care and courtesy; by communicating effectively with their various stakeholders; and by exercising appropriate judgement.

The Code also includes obligations towards safety, sustainability, climate change, and diversity and inclusion. Members undertake their professional duties with utmost consideration to their client's rights - and also being respectful of life, law, the environment and the public good; structural engineers must be mindful of the short- and long-term impact of their actions.

Quality  
Support  
Fairness  
Communication  
Welfare  
Serviceability  
Competence  
IStructE member  
Judgement  
Skill  
Respect  
Integrity  
Assurance  
Principles  
Ethics  
Care  
Professional excellence  
Safety  
Impartiality  
Transparency  
Courtesy  
Reputation of profession  
Fairness  
Principles  
Public interest  
Regard for legislation



# Competence and excellence

Driving professional competence is at the core of everything we do. The Institution's educational, training and professional assessment requirements are demanding, and our examinations set the highest standards. We make sure routes to membership are accessible and inclusive and that members are supported through the qualifying journey.

Professional qualification is an important milestone in an engineer's development, but qualified members continue to make a commitment to learning and development through the Institution's mandatory CPD requirements.

The Institution supports a diverse group of members and non-members ranging from students to those who have retired. By developing qualifications and resources - in areas such as structural safety, climate change, digital, fire, seismic and offshore engineering - we can help our members build, refresh, and extend technical and professional competencies.

We lead in best practice and industry standards. We also collaborate with other industry experts, national and international organisations to share the latest developments in the profession.

All of this is underpinned by a strong regional presence that supports engineers wherever they are in the world.

## Supporting early career engineers

For early career engineers to show excellence and improve their employability we offer the Certificate in Structural Behaviour, which assesses an engineer's understanding of fundamental structural theory. The certificate is an internationally recognised mark of competence sought by modern employers. It also helps engineers become professionally qualified.

## Affiliate scheme

The IStructE Affiliate scheme is open to anyone with an interest in structural engineering. Benefits include discounts on our publications and courses, access to the E-library, and to networking events, lectures and livestreams.





# Convenient, flexible learning choices

Structural engineering is constantly evolving, and keeping abreast of technical and professional developments is an essential part of the role. The Institution offers many resources to benefit both members and non-members. These are useful to structural engineers and broader audiences, such as teachers looking to inspire future generations, non-structural engineers undertaking research, or those new to the industry.

## Courses

Through partnerships with leading experts, academic institutions and trade and professional organisations, our CPD courses cover a range of topics to support practitioners at every stage of their career. In 2021, we ran 52 live courses, of which 46 were delivered online.

A brand new on-demand training course was launched in October 2021. *Embodied carbon basics for structural engineers* joins the existing *Professional Review Interview (PRI) preparation course* and the *CM Exam preparation course*. All three provide an accessible and flexible way to prepare for Chartership.

## Events

Members have access to a broad programme of events, including research, practice, education, and technical lectures. Regional Groups also have programmes tailored to local audiences and their needs. We also support events run by affiliates,

providing insight from across the built environment. In 2021 we ran 32 HQ events, of which 28 were delivered exclusively online. The Institution as a whole ran 262 events.



## Library

The Institution's Library houses one of the UK's finest printed structural engineering literature collections. Despite the building remaining closed to visitors throughout the year due to Covid, and Library staff being partially furloughed until August; books, standards and technical reports were available to loan either by post or on a click-and-collect basis, with 60 new books and standards added to the collection.

Our literature-based enquiry service remained open throughout the year, with our librarians able to resolve most enquiries while working remotely.

## E-library

With the physical library closed for the majority of the year, we focused on providing members with access to digital material. 43 new e-books were purchased, taking the total to 455 by the end of the year. The e-library received over 21,000 access requests - 9% down on 2020 (when for a large part of the year only the E-library service was available) - but up 14% on 2019, the last full pre-pandemic year.

## E-library growth



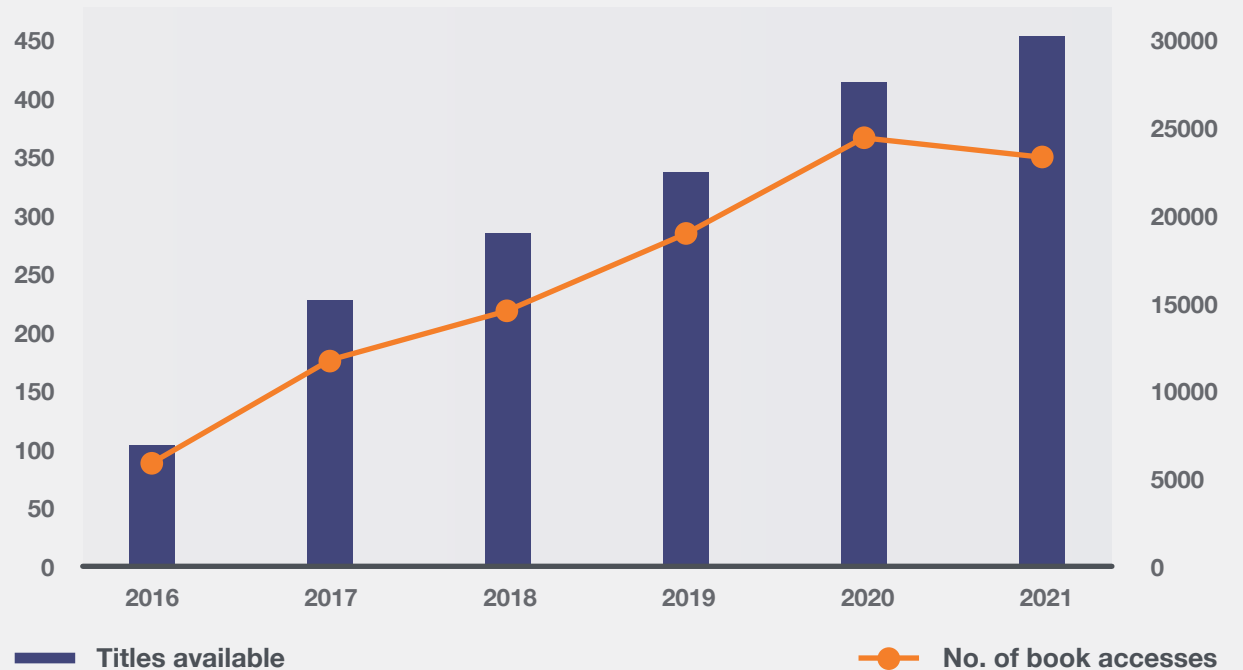
# 455

titles available in 2021



# 23126

book accesses in 2021





## Publications

We produce a range of quality publications catering for all career stages and covering generalist and specialist structural engineering disciplines:

### **The Structural Engineer**

Our flagship publication is published 11 times a year, featuring peer-reviewed technical and professional guidance, and case studies from a fascinating range of structural engineering projects. The magazine continues to promote lean and low-carbon design in response to the climate emergency.



### **Structures**

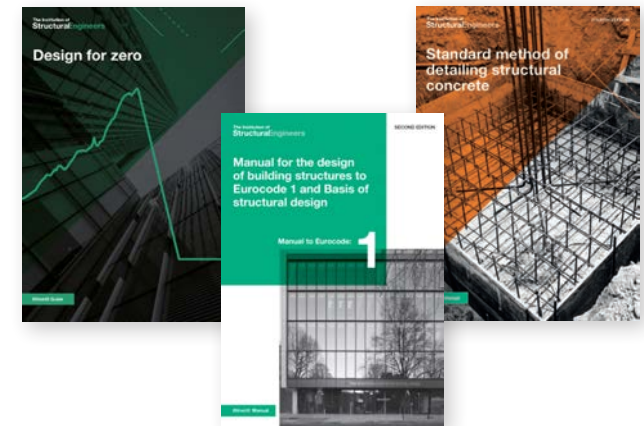
This peer-reviewed journal received around 3,800 submissions in 2021. There were also almost 600,000 downloads of *Structures* articles in 2021, up from 340,000 in 2020 — and the journal continues to gain importance and influence among the global structural engineering research community and practising engineers. *Structures*

continues to build its reputation with a 2020 Impact factor of 2.983 (awarded June 2021). This trend continued in 2021, with an Impact factor of 4.010 (awarded June 2022). See Focus on *Structures*, right.

### **Manuals and guides**

Our book portfolio now contains almost 40 titles. Three new titles were published in 2021:

- Design for zero
- Manual for the design of building structures to Eurocode 1 and Basis of structural design (2nd edition)
- Standard method of detailing structural concrete (4th edition)

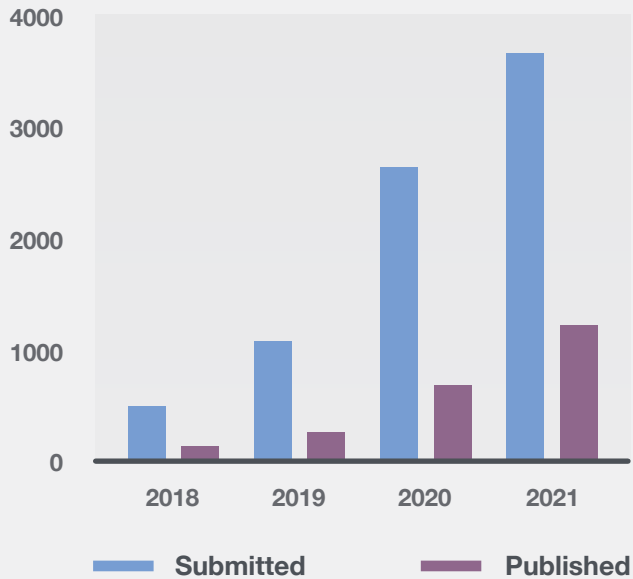




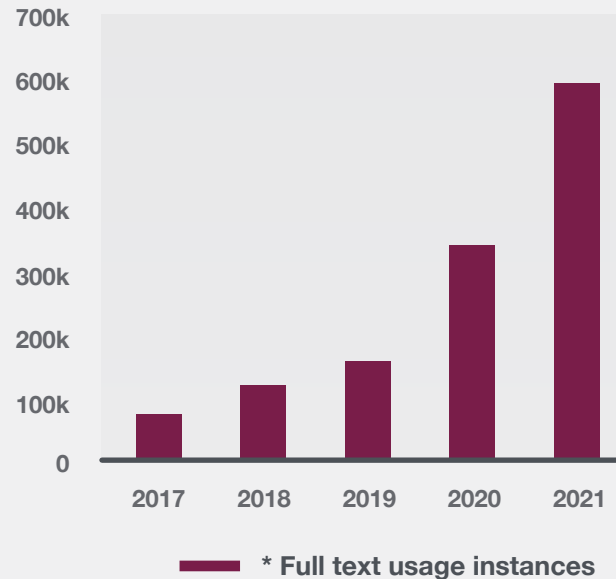
# Focus on *Structures* journal

In order to ensure only the most interesting and innovative papers are included in *Structures*, fewer than 30% of submissions are accepted.

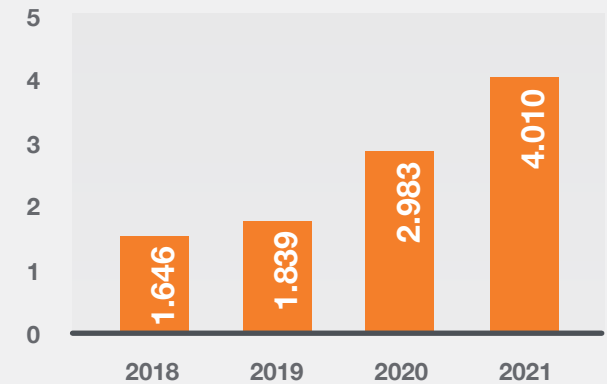
### Manuscripts submitted and published



### *Structures* usage\* over time



### Impact factor (IF)



**Impact factor (IF)** is a measure of the frequency with which the average article in a journal has been cited in a particular year. It is used to measure the importance or rank of a journal by calculating the times its articles are cited.



# Award Winners 2021

After a break in 2020 due to the Covid 19 pandemic, 13 fantastic projects demonstrating incredible work across the global structural engineering community were recognised with Structural Awards at a glittering ceremony in London in November 2021.

Structural Award winners 2021			
Award	Company	Project	Country
Award for Construction Innovation	Eckersley O'Callaghan and Foster + Partners	Apple Marina Bay Sands	Singapore
Award for Long Span Structures	Buro Happold	Jewel Changi Airport	Singapore
Award for Minimal Structural Intervention	Buro Happold	Elizabeth Line OLE Gantry Rigorous Assessments	UK
Award for Pedestrian Bridges	Buro Happold	Lille Langebro	Denmark
Award for Small Projects of under £3 million	Henry Fagan & Partners	The Viper Elevated Walkway at the Newt in Somerset	UK
Award for Structural Artistry (building structures)	Arcoplus Institute of Shanghai Architectural Design & Research and StructureCraft	Taiyuan Botanical Garden Domes	China
Award for Structural Artistry (non-building structures)	Basler & Hofmann AG	Future Tree	Switzerland
Award for Structural Heritage	Holmes Consulting LP	Christchurch Town Hall	New Zealand
Award for Structural Transformation	Eckersley O'Callaghan	Ashworth Centre and Library Extension - Lincoln's Inn Fields	UK
Award for Structures in Extreme Conditions	Arup and PYD	Atrio North Tower	Colombia
Award for Tall or Slender Structures	Skidmore, Owings & Merrill and ECADI	Tianjin CTF Finance Centre	China
Award for Vehicle Bridges	Arup and Carlos Fernandez Casado S.L.	Rose Fitzgerald Kennedy Bridge over the River Barrow	Ireland
Award for Zero-Carbon Ambition	Webb Yates Engineers	York House	UK
Supreme Award for Structural Engineering Excellence (joint winner)	Buro Happold	Lille Langebro	Denmark
Supreme Award for Structural Engineering Excellence (joint winner)	Holmes Consulting	Christchurch Town Hall	New Zealand

In 2022 exciting changes to the Structural Awards are planned to ensure that we recognise the incredible work of structural engineers around the world. In place of the current award categories, entries will be judged in response to four key attributes that

exemplify structural engineering achievement: Planet, Process, Profession and People. We believe this will enable a wider breadth of entries and offer scope for more diverse projects to be showcased.

## People and Papers Award winners 2021

Award	Name	Award	Name
Gold medal	Paul Fast	Lifetime Achievement Award	Stephen Baldwin
Lewis Kent Award	Peter Debney	Murray Buxton Award	Rob Amphlett
Lewis Kent Award	Dr Andrew Minson	Oscar Faber Award	Hugh Dutton
Lewis Kent Award	James Parsons	Service Award	Una Beagon
Lewis Kent Award	Julia Ratcliffe	Service Award	Richard Davis
Award for Excellence in Structural Engineering Education	Professor Richard Walls	Service Award	Esam Al Kelaby
Clancy Prize	Stephen Fernandez	Service Award	Dr Mehdi Khabbazan
Derrington Construction Award	Natalie Bowkett, Peter Goring, Des Mairs	Service Award	Azhar Raouf
Guthrie Brown Award	Tom Kember	Sir Arnold Waters Medal	Brandon Eastwood
Husband Prize	Bahman Kermani, Paul Pankhurst	Sir Arnold Waters Medal	Nello Petrioli
Keith Eaton International Award	John Price	<i>Structures</i> journal – Best Research Paper Prize	K. Naresh, K. Shankar, R. Velmurugan and N.K. Gupta
Kenneth Severn Award	Max de Podesta	<i>Structures</i> journal – Best Research into Practice Paper Prize	James Helal, André Stephan and Robert H. Crawford
Kenneth Severn Award (commendation)	Matthew West	President's Award	Will Arnold
Kenneth Severn Award (commendation)	Caomhan Cronin	Young Structural Engineering Professional Award	William Rogers-Tizard
Lifetime Achievement Award	Martin Ashmead	Young Structural Engineering Professional Award (commendation)	Alastair Low-Macrae

# CROSS

In response to the Grenfell Tower fire tragedy and following a recommendation by Dame Judith Hackitt in her independent review of building regulation and fire safety, CROSS relaunched with a new and improved website in March 2021. The scheme expanded to cover fire safety issues through collaboration between the Institution of Structural Engineers, the Institution of Civil Engineers, and the Institution of Fire Engineers. This expansion was funded by the Department for Levelling Up, Housing, and Communities (formerly MHCLG).

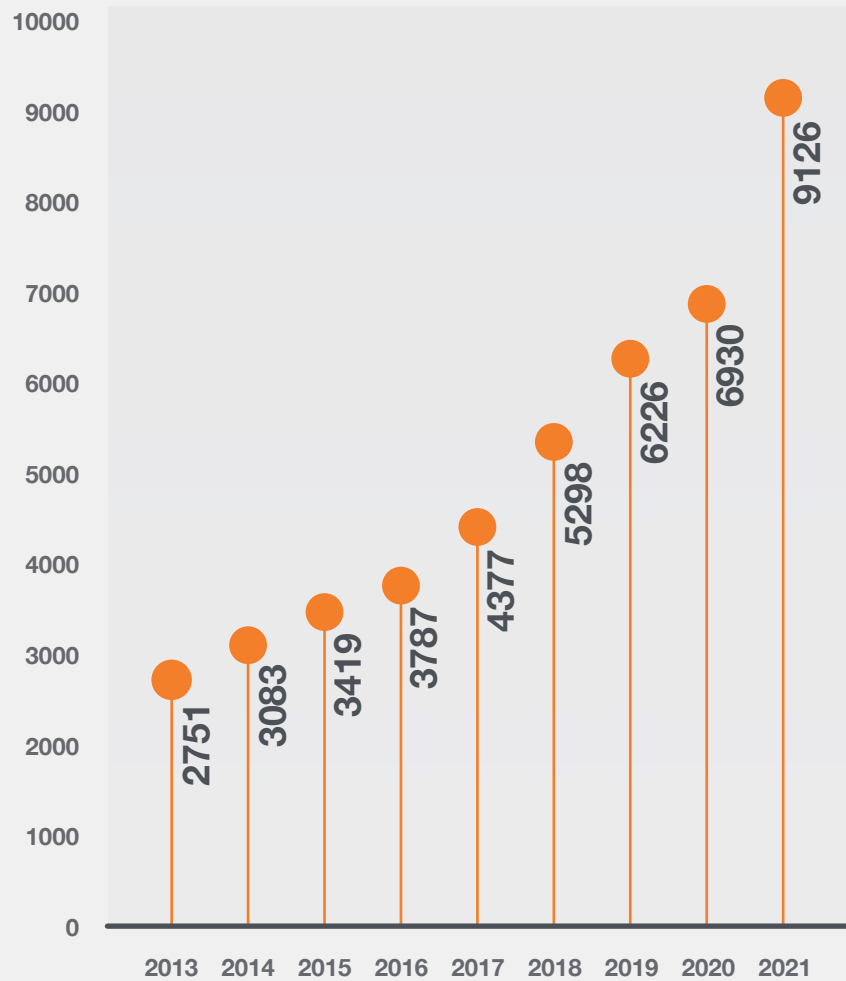
CROSS, first launched in 2005, now encompasses SCOSS (Standing Committee on Structural Safety) which was established in 1976. The purpose of CROSS is to share knowledge and lessons learned to help create a safer built environment. We do this by publishing safety information based on the reports we receive and information in the public domain.

Our confidential reporting system can be used by professionals who work with buildings and other structures. Reports typically relate to concerns, near misses, or incidents relating to fire safety and structural safety issues. Reports received are processed and reviewed with the assistance of our expert panels. Our panels comprise leading experts in their respective professions, and it is their insight and guidance that make CROSS reports such a valuable resource.

We publish a selection of safety reports in our quarterly newsletter, and safety alerts on issues that may be critical and time sensitive. CROSS operates in the United Kingdom, Australasia, and the United States so that safety issues are shared internationally.



### Number of CROSS subscribers

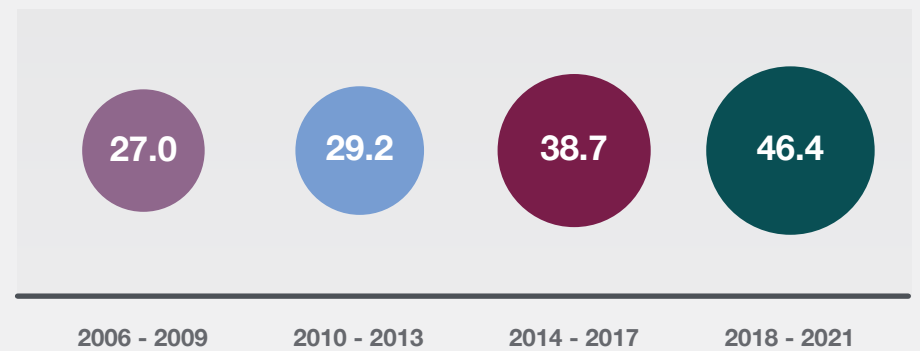


### Total number of Safety Report views - 2021



### Average number of reports published per year

(2007 to 2021 inclusive) - All Regions



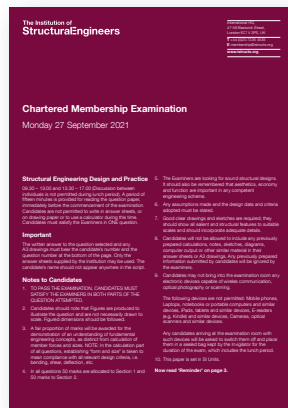
# Climate emergency becomes climate action

The Institution continues to lead on the climate emergency, driving climate action both within the Institution and across the wider industry.

Led by the Climate Emergency Task Group, we worked across the Institution – from our member-driven technical committees and panels to our in-house publishing and events teams – to ensure sustainability and climate action are truly embedded in our work. This has raised standards, provided guidance and tools for members and other professionals, and leads the debate across the profession.

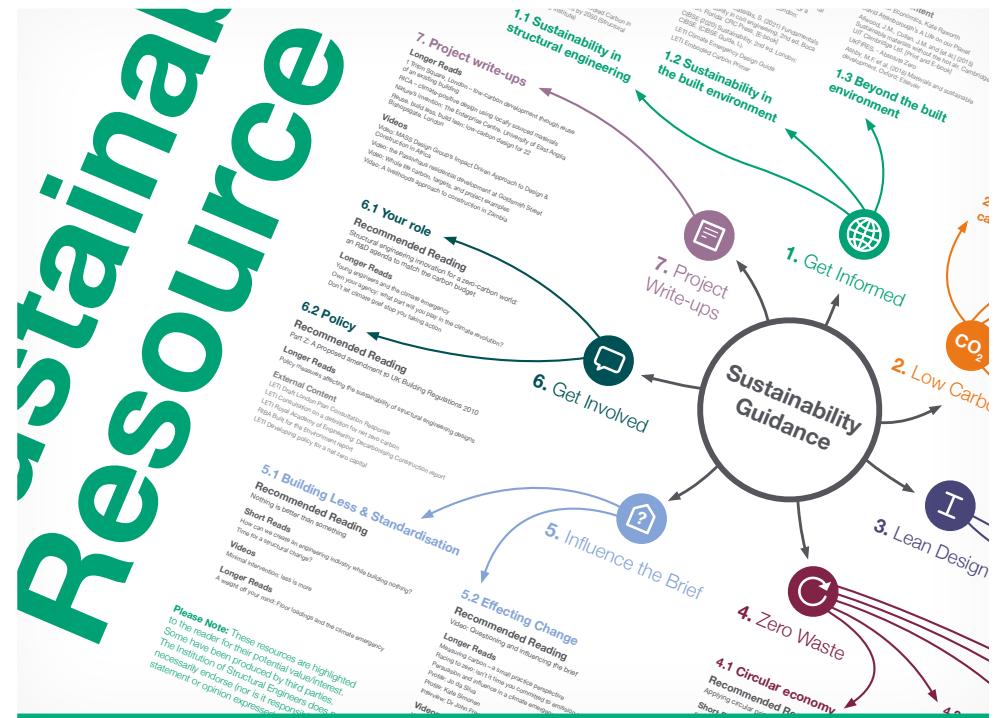
## Raising standards

We worked with dedicated task groups to embed sustainability and embodied carbon within the Institution's Code of Conduct, chartered membership process, and judging criteria for the Structural Awards. Changes were approved by the Board of Trustees, and will be introduced throughout 2022 and 2023.



## Industry-leading guidance

As awareness of the climate emergency grows, demand for information and tools to address the issue will only increase. We are providing structural engineers and other built environment professionals with the resources they need to respond to the changing needs of the world. Much of this guidance is freely available to non-members too, at [www.istructe.org/climateemergency](http://www.istructe.org/climateemergency), and can also be viewed on our interactive Sustainability Resource Map at <http://www.istructe.info/SRM>.



## The Structural Carbon Tool

We launched our award-winning carbon calculator, an open-source Excel-based tool, developed in collaboration with Elliott Wood. The tool is free to download from [www.istructe.org/the-structural-carbon-tool](http://www.istructe.org/the-structural-carbon-tool), allowing quick carbon emissions estimates to be made in accordance with our design guide *How to calculate embodied carbon*.

The tool was downloaded nearly 6,000 times during 2021, by structural engineers, architects, and other professionals.



## Thought leadership

Finally, we continue to lead the debate across the industry, including the launch of the climate action video *What are you going to do about it?* to coincide with the COP26 climate conference.

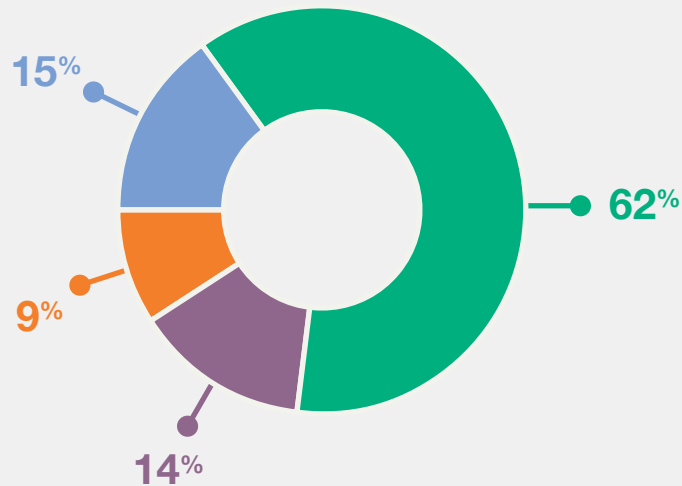
We also contributed to the writing of Part Z ([www.part-z.uk](http://www.part-z.uk)), an industry proposal to include embodied carbon reporting and reduction into the UK Building Regulations. To date, over 170 firms from across the built environment have responded to the Part Z initiative by publicly declaring their support for such regulation in the UK.



# Financial highlights 2021<sup>1</sup>

## Income 2021

Most of our income comes from membership subscriptions and trading subsidiaries. In 2021, these sources accounted for 77% of all total revenue. This represents a 3.75% increase on 2020.

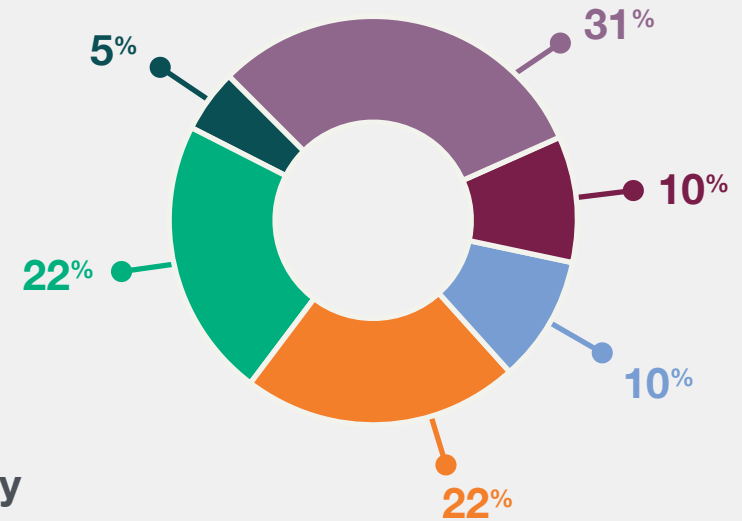


### Key

- Trading companies
- Learning, development and examinations
- Membership subscriptions
- Other activities and donations

## Expenditure 2021

The provision of membership, learning, development and examinations was the largest area of expenditure in 2021, accounting for 31% of total spend. This represents a 2.95% increase on 2020.



### Key

- Learning, development and examinations
- Other staff and employment costs
- Trading companies
- Other operating costs
- Digital transformation and IT
- Depreciation

<sup>1</sup> Data drawn from final 2021 management accounts. The full audited and adopted accounts of the Institution are available on [istructe.org](https://www.istructe.org)





Image – York House

# Looking to the future

By necessity, the future of this Institution must be bound to the developing demands on the structural engineering profession which, in turn, must adapt to meet the needs of the society it serves.

The notion of society as the client is not perhaps the most immediate and obvious starting point for built environment professionals. Rightly however, it is increasingly taking centre stage.

Ensuring public safety is this Institution's core raison d'être and in recent years this scope has widened to include the responsibilities that structural engineers face in addressing the impact of climate change.

Add in a growing awareness of inclusive design, the challenges of capacity building in the wider global landscape of urban development, resilience in all its forms; sustainable solutions and economic prudence, then there is no shortage of both opportunity and challenge for the profession at large wherever in the world our members are based.

Our growing digital footprint provides the ideal platform for IStructE to draw its communities closer together, and in coming together to share and learn means most definitely we are stronger in our collective service to society.



Ensuring public safety is this Institution's core raison d'être and in recent years this scope has widened to include the responsibilities that structural engineers face in addressing the impact of climate change.



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