

SPRING 2019

Maplines

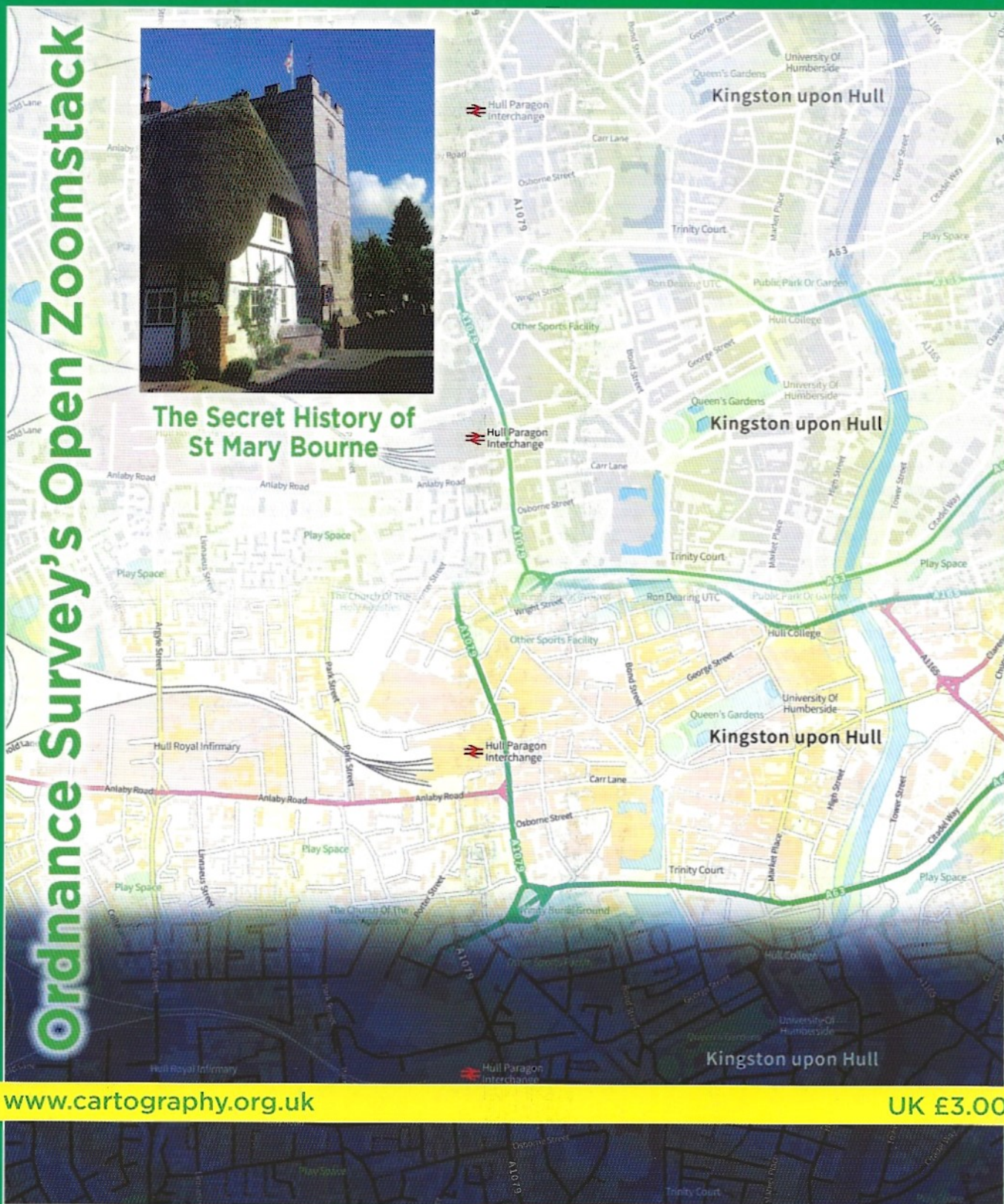
THE MAGAZINE OF THE BRITISH CARTOGRAPHIC SOCIETY

BCS-SOC
Conference
11-12 Sept
at the OS

Ordnance Survey's Open Zoomstack



The Secret History of
St Mary Bourne



www.cartography.org.uk

UK £3.00

Warm welcome to the latest edition of *Maplines*. We have some tasty map treats for you in this issue. As the new Senior Editor, am hoping to shake things up a bit and make *Maplines* an outward-looking, forward-thinking membership magazine.

As always we are always looking for new and relevant articles to spice-up *Maplines*. Made a new map? Found an old map? Been to a conference?

BCS Website Contact List

Website Coordinator: Overview and coordination:

Warren Vick: wvick@europa.uk.com

Homepage content/coordination with other members of this team to ensure consistency throughout the website and liaison with Warren Vick:

Mary Spence: maryspence@mac.com

Membership/Members Directory:

Laura Caton: Laura.Caton@UKHO.gov.uk

Corporate members:

Alan Grimwade: alangrimwade@cosmographics.co.uk

Careers/education: **Elaine Watts:**

Elaine.Watts@nottingham.ac.uk

New product launch? Want to interview someone? You can be a member or non-member to enter an article. On the BCS website we have a writer's template available to get you started. If you are a non-member, then we'll send you a copy of the printed magazine... and perhaps you'll become a member in the future!

Caroline Robinson, Senior Maplines Editor

Events: **Paul Naylor:** Paul.Naylor@os.uk

Awards: **Jim Goldsmith:** Jim.Goldsmith@os.uk

Website Statistics: **Warren Vick:** wvick@europa.uk.com

BCS Vice President, Chair of the Publications Committee and Maplines editor: **Martin Lubikowski:** mldesign@btconnect.com

Who's Who entries:

Alex Kent: alexander.kent@canterbury.ac.uk

For any issues, problems or proposals regarding the website, please contact Warren Vick first. For any specific requests for items to be included into sections of the site, please contact the people listed above.



Editorial Contact Details:

Senior Editor: Caroline Robinson:

Maplines.editors@gmail.com

Deadline for copy for the Summer 2019 edition is Friday 21 June 2019. The views expressed in *Maplines* are those of the Editors and Contributors and not necessarily those of the BCS.

© The British Cartographic Society 2019

Publishers: Geomares Publishing UK Ltd, Unit A2 Mindenhall Court, High Street, Stevenage, Herts, SG1 3BG, UK, www.geomares.nl

Printing: The Manson Group, St Albans

Advertising in Maplines

Consider the Society's magazine a shop window to promote your company, event, course or publication to the mapping community.

To submit editorial, contact the Editors: maplines.editors@gmail.com

For display advertising, contact Sharon Robson:

sharon.robson@geomares.co.uk or +44 (0)1438 352617

All photography and illustrations in this issue have been provided to *Maplines* by the article authors unless stated otherwise. All contributors to *Maplines* are responsible for assuring that they have permission to use images and content. Please add credits/acknowledgements as appropriate.

To sponsor a *Maplines* Quiz, please contact the Editors for more details.

Contents

The Magazine of the British Cartographic Society (Registered Charity No. 240034)
Volume 34, 1st Issue – Spring 2019

Maplines Regulars

p.04 Admin Report

p.05 UKCC Report

Also in this issue. . .

p.18 Refugees During WWI

p.20 Cartography: An Introduction

p.21 Contemporary Cartography

p.22 Alice Gadney's Award

p.23 BCS Symposium 2019



New Data Product from BGS

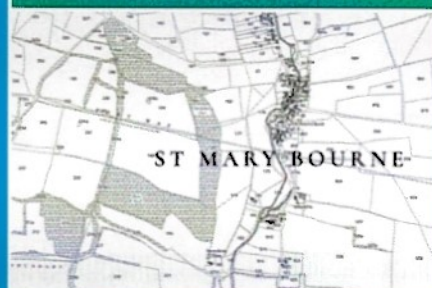
6

Clive Cartwright, BGS, takes us through their geohazard data visualisation product.

Mapping St Mary Bourne

8

At look at the mapping history of the village of St Mary Bourne, Hampshire.



A Message from the President

Once again, it's awards time and I can encourage all mapmakers to consider entry for their work – to not just be 'I could' or 'I would' or even 'I should', but actually 'I have...'

As a starter, let me outline the categories that we're looking for entries in:

- Stanfords Award
 - for printed mapping
- Avenza Award
 - for electronic mapping
- John C. Bartholomew Award
 - for thematic mapping
- Ordnance Survey Award
 - for excellence in the application of Ordnance Survey data
- The Garsdale Design Award
 - for 3D cartography (real or imagined) using any technique and/or medium
- Ian Mumford Award
 - recognises excellence in original cartographic research undertaken by university or college students

There is also the BCS award which goes to the entry judged to be the best of the best. Here is a reminder of last year's laser-cut winner, by David Kidd from Overview.Design. You can see this in more detail, together with other winners and entries on our awards page – www.cartography.org.uk/awards

This year the closing date for entries is 28 June 2019; full details are of course on our website.

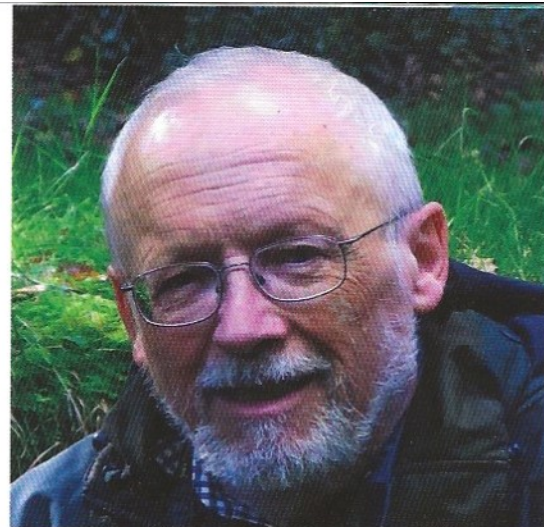
Can I also just remind you that as this year sees the ICA's Barbara Petchenik children's competition, we don't run the BCS Children's Map Competition – supported by the UK Hydrographic Office – which will be held again in 2020.

I'm of an age to have been introduced to learning styles as part of my children's school's programme of support for their exams. Now if maps are one of the key elements of a visual learning style, I've wondered how we, as cartographers, would get our message across to those with auditory or kinaesthetic learning preferences.

I had been planning to write something about how this all might impact the way we view map design. But with a little more research than gained on the average management course or school parents' evening, the issue may not be so clear cut. A recent paper looking at the scientific basis for such differentiation, concluded that: "There is reason to think that people view learning styles theories as broadly accurate, but, in fact, scientific support for these theories is lacking. We suggest that educators' time and energy are better spent on other theories that might aid instruction."

This does though highlight the need to both choose the right type of map for the information to be shown and to be aware of the audience to whom we are communicating. I'm reminded in particular of the series of blog posts on design fundamentals put out by the Ordnance Survey a few years ago. In very brief summary, these focussed on the need to:

- Understand the user requirements – making sure that the user is able to easily understand the message that the cartographer was attempting to portray
- Consider the display format – paper or digital? Or both? How can it work across a range of screen sizes?
- Ensure there's a clear visual



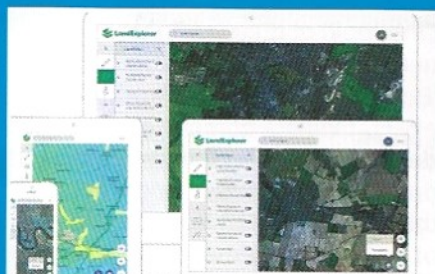
hierarchy – help people focus on what's important

- Keep it simple – bearing in mind Dieter Ram's words that "Good design is as little design as possible."
- Ensure the legibility of the map as the user should be able to easily understand the message that the cartographer was attempting to portray.
- Keep everything consistent
- Check for accessibility – our output should be intuitive to use and not rely upon a good knowledge of cartography or any other technical understanding and should aim to be as inclusive as possible
- Make sure the composition works – ensuring that everything works as a whole. If it looks right, it probably is.

As with everything, we need to always remember that the responsibility for clear communication lies with the sender, not the receiver.

Finally, as I write we're confirming the dates and location for our conference in September. I'm planning to let you have more details in my next e-newsletter.

Richard Carpenter, BCS President

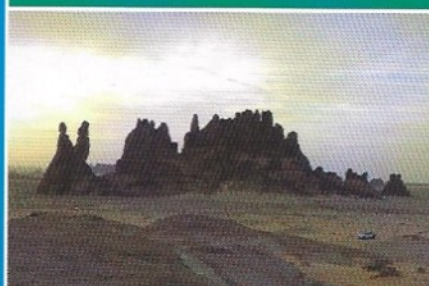


Meeting of Maps & Minds

11 A new platform hopes to help prevent the effects of Climate Change.

Mountains of Jibal Nawah

14 Abdullah Al-Sayari takes a journey through unique rock formations and inscriptions.



OS Open Zoomstack

16 David Jones describes a new open dataset from Ordnance Survey.

Admin Report

Membership

Thank you to all our members who have renewed their membership for 2019.

We are very fortunate to have such a loyal group of supporters, many of whom have been members for many years. May we ask that our long-standing members check they are paying the correct subscription amount and that it is paid into our main account as detailed below.

Full members: £40 (Overseas £55),
Affiliate: £20 (Overseas £35),
Fellows: £60 (Overseas £75)

We are also very pleased to welcome our new members. Your support for the Society is greatly appreciated.

Full

Farhana Alam, Stephen Morrison, Sam McGregor, Craig Coates, Laura Caton, Akhtar Muhammad, Matthew Ponzecchi, Keith Parry, Trevor Whittock, Sally Bakker,

Peter Francon-Smith, Yvonne Latymer, Chris Marsh, Michael Johnson, Caroline Hobden, Charles Eggleton, Sally Ekagbo, David Richards, Ronan Spencer, Russell Carr, Matthew Patterson, Archie Corliss, James Winpenny

Affiliate

Peter Hawksorth, Susan Spring, Rosendo Naranjo, Peter Davies, John Morrison, Linda Scott, Shaie MacDonald

Student

Holly Tennant, Samuel Cornelius-Light, Christos Evangelides, Jack Arnett, Annabel Hales, Rick Yeatts, Peter Green

Educational

Langley prep at Taverham Hall, Manchester Academy, Churchdown School Academy, Pewsey Vale School

Corporate

Compusult Ltd

Our BCS subscription year runs from 1 January to 31 December. New members will receive all issues of *The Cartographic Journal* and *Maplines* for the year of joining.

To join or renew your subscription, please use the following methods:

- Website application at www.cartography.org.uk
- Bank transfer to Account Number: 06753868, Sort code: 55-50-23
- Cheque made payable to The British Cartographic Society – please write your membership number on the back when renewing

BCS Administration are happy to help any members with issues or queries they may have related to the Society.

Email: admin@cartography.org.uk.

Mailing address: 112 High Street, Balsham, Cambridge CB21 4EP.

UKCC Report

The ICA Executive Committee met in Glasgow for two days at the end of February 2019. The Executive (President, Secretary General, 7 Vice-presidents and the Past-president) typically meet twice a year, around September and March, but timing depends when International Cartographic Conferences are being held, especially if it includes a General Assembly, as Tokyo 2019 does. Despite modern electronic communications and business in between meetings being conducted by email, there is still a lot to be said for getting together around a table and discussing issues, especially when trying to develop things like strategy

documents, or debating the minutia of changes to Statutes and By-Laws.

The Executive were very impressed by the fine weather Glasgow provided. If they had come the same dates in 2018, they would have been confronted by snow on the ground, no sunshine and temperatures in the mid-teens. It seemed a shame to be shut in a meeting room all day, but at least walking to lunch was pleasant and we enjoyed the glorious views over the city and the hills to the south from the front of the main university building. They also enjoyed the Scottish hospitality, especially 'Millionaire' shortbread which

disappeared very quickly, and very much appreciated a dinner hosted by the BCS in a traditional Scottish restaurant (most even sampled haggis!).

One topic of discussion was the need (or not) for a Cartography 'Body of Knowledge' (BoK). In effect, this is a comprehensive definition of the discipline, setting out the core areas of knowledge that one should at least be aware of as a cartographer and identifying how things are distinct to cartography. Many other disciplines have such documents, the best known in our general area being the GIS BoK developed largely by the US GIS community in the



Members of the committee meeting in Glasgow.

1990's and FIG's Surveying BoK. While elements of cartography are included in the GIS BoK, it naturally has a different focus and some aspects we might consider critical in a cartographic context are treated somewhat superficially. The GIS BoK is currently being revised in what is a significant, relatively long-term project, which takes a rather different view of a BoK to the previous version and what the ICA hope to provide.

There has been some work done on a Cartography BoK in recent years by the ICA's Commission on Education and Training, led by David Fairbairn from Newcastle University, but in order to really focus on the task, the Executive set up a specific Working Group last year with a relatively short-term goal. Progress by this group faltered due to criticism from various quarters. Some seem to think cartography is not distinct enough to require its own BoK and it is adequately covered by the GIS BoK; some involved in the revision of the GIS BoK consider a Cartography BoK either a duplication of the very comprehensive documentation they are planning, or see it competing with them. Others think that more comprehensive cartography textbooks adequately define modern cartography.

After some interesting open discussions, the Exec reaffirmed that there is a need to create a

Cartography BoK, partly to distinguish us from GIS, but also to have something to point to when those from other scientific disciplines and organisations like the UN ask what defines 'cartography'. Hopefully this will re-invigorate the Working Group and we will start to see draft documents about key areas of cartography being circulated in the near future for comment and feedback.

Other discussions focused on preparations for ICC2019 in Tokyo this July. While a few deadlines have been extended and the organisers are a little behind with other things, there have been over 700 papers submitted and reviewed for the conference. In the full papers, submissions from the UK are limited and we clearly show less activity that has previously been the case, with countries such as Belgium and Poland being much higher up the submission league table. Hopefully there are more UK contributors who have only

submitted an abstract, who may be keener for full papers to be published in refereed journals than in the proceedings, but I have not seen the full author list.

In other UK business, as I write this the National Report is slowly coming together and we hope it will provide an effective summary of cartography in the UK over the last 4 years. Thanks to all BCS members who have contributed. I will soon follow this by organising our contribution to the International Cartographic Exhibition. The Japanese organisers had significantly cut the space available for displaying maps, but in response to approaches from me and the Secretary General, they have reverted to something closer to previous exhibitions, which is good. The exhibition always draws a lot of interest.

I am honoured that the UKCC decided to nominate me for a further four-year term as ICA Vice-President, and I am hopeful I will be re-elected. There have been eight nominations for up to seven Vice-Presidents (the number up to that limit is decided by the General Assembly), so someone is likely to be disappointed. The UKCC has also nominated Alex Kent to continue as the chair of the Commission on Topographic Mapping for a second term.

I hope to see some of you in Tokyo.

By David Forrest, Chair, UK Cartography Committee



Committee meeting in progress.

New Data Product Release from British Geological Survey

A Picture is Worth a Thousand Words, or a Thousand Hexagons

Data visualisation offers the opportunity to make huge amounts of complex data accessible and understandable – communicating patterns, succinctly and effectively, leveraging meaning behind data for the purpose of decision support, blending science and art.

The British Geological Survey (BGS) recently undertook a project to evaluate and explore the visual communication techniques for scientific data; hexagon grids proved to be one of the most popular results from this exercise.

The study focussed on delivering a set of easy to interpret, generalised outputs which would enable a broad audience to grasp scientific concepts. We explored seven of the current geohazard resources (see box out).

The resulting hexagon grids provide a visually striking yet simple mechanism, populated with a pared down version of existing complex geological data.

Why do Geohazards Matter?

Increasing demands on land use means that space is restricted not only by current infrastructure (e.g.

buildings, pipes, cables, tunnels, foundations), but also by the natural geological hazards that co-exist.

There are also impacts on society, for example, geohazards such as landslides and mining related subsidence may result in loss of life, injury, significant financial loss or environmental damage.

Why use Hexagon Grids?

The geometry of a hexagon grid is simple, elegant and delivers an aesthetically pleasing output. Unlike the more familiar square grid scaling, grid orientation (horizontal [point up] or vertical [flat side up]) and cell referencing are not so clear cut. Hexagons provide a framework which delivers an understandable, comparable, visual interpretation.

How to Convert Existing Vector Data

A set of empty hexagon grids were generated using a 1km side length, a key criteria to make them scalable. Each geohazard dataset was translated from five hazard classes to three (low, medium or high) to simplify the output.

Statistical data was generated for each cell using dominant coverage (landslides, running sand and compressible ground) or worst-case score (for shrink swell, soluble rocks, collapsible deposits). These

calculated values were transferred to the hexagon grid.

Different techniques were used based on the spatial size and distribution of the hazards to ensure that the representation was suitable.

For datasets with a wider spatial distribution a second processing stage was undertaken to populate a 5km hex grid using the dominant coverage for each hazard.

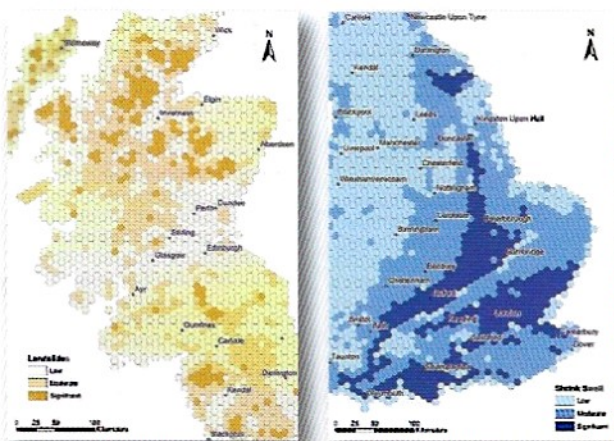
Each hazard was categorised in the following manner:

- Low: localised, small-scale mining may have occurred in the area.
- Moderate: small scale, underground mining may have occurred in the area.
- Significant: underground mining is known or considered likely to have occurred in the area.

Challenges using Hexagon Grids Defining size parameters, hexagons can be scaled using area or side length. Using area produces a logical scale factor, however, side length maintains the visual impact between scales.

Summarising via spatial statistics may lead to over, or under, estimation of the extent of the hazard. Small features may disappear completely, this issue was highlighted when processing the mining hazard data.

Conversion to a hexagon grid generalises the data altering



Left: Landslide susceptibility – showing a spatial distribution of a sporadic nature more prevalent in upland areas.

Right: Shrink Swell susceptibility – showing a more definite spatial distribution, directly linked to the underlying geology.

perception of the spatial distribution. Results of any analysis and subsequent interpretation should be viewed with care. Comparison with the underlying source data will reveal variations due to the generalisation process applied.

Do Hexagon Grids Promote the Creative Exploration of Data?

Geohazards are intrinsically linked to the underlying geology. A detailed understanding of the geological properties, associations between lithologies and their processes, is critical to identifying areas at potential risk. Varying levels of susceptibility occurs according to geological and morphological parameters.

The hex grids have been used as a method to clearly portray this information in an easy-to-use format. The outputs have been used to raise awareness of the potential hazards present across Great Britain.

Opportunity exists to combine the hexagon grids with other information (e.g. population to provide further valuable insight into potential risk). By exploiting this type of data, users can quickly create an overview of potential risk, according to asset or region, and identify areas on which to focus more detailed analyses.

Can Hex Grids be used to Visually Communicate Scientific Data?



What are Geohazards?

Properties of Earth materials are important for all engineering projects and the classification of ground stability hazards.

Landslides (slope stability): Slope instability occurs when particular slope characteristics (such as geology, gradient, sources of water, drainage, or the actions of people) combine to make the slope unstable.

Shrink Swell potential: Swelling clays can change volume due to variation in moisture, this can cause ground movement, particularly in the upper two metres of the ground that may affect many foundations.

Soluble rocks (dissolution): Ground dissolution occurs when certain types of rocks, containing layers of soluble material, get wet and the soluble material dissolves. This can cause underground cavities to develop, leading to surface collapse.

Compressible ground: Some types of ground may contain layers of very soft materials like peat or some clays. These may compress if loaded by overlying structures or if the groundwater level changes.

Collapsible deposits: Some kinds of rocks and soils may collapse when a load (such as a building or road traffic) is placed on them, especially when they become saturated.

Running sand: Some rocks can contain loosely packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', potentially removing support from overlying buildings and causing damage.

Mining hazard: Provides essential information for planners and developers building in areas of former shallow underground mine workings.

Hexagons provide a good method to display data at a national or regional scale. In terms of GIS data for analysis, they lack the detail for useful analysis for resolutions greater than regional scale. However, generic, overview statistics or analysis can be carried out.

The regional impact overview that

the hex grid provides can feed into national planning budgets, helping to identify where more detailed data analysis for hazard mitigation, preparation, etc., can be budgeted.

These Hex grids essentially draw a user's attention to where geohazards should be considered, suggesting that a picture is indeed worth a thousand words. We did this work in ArcGIS 10.3 to generate the Hexagon dataset.

The data can be found on the BGS website. Direct links are found here from GeoSure Hex (www.bgs.ac.uk/products/geoSure/geoSureHex.html) and Mining Hex (www.bgs.ac.uk/products/geohazards/miningHazard/miningHazardHex.html).

By Clive Cartwright, British Geological Survey

Last 2,000 Years Revealed by Going Geospatial

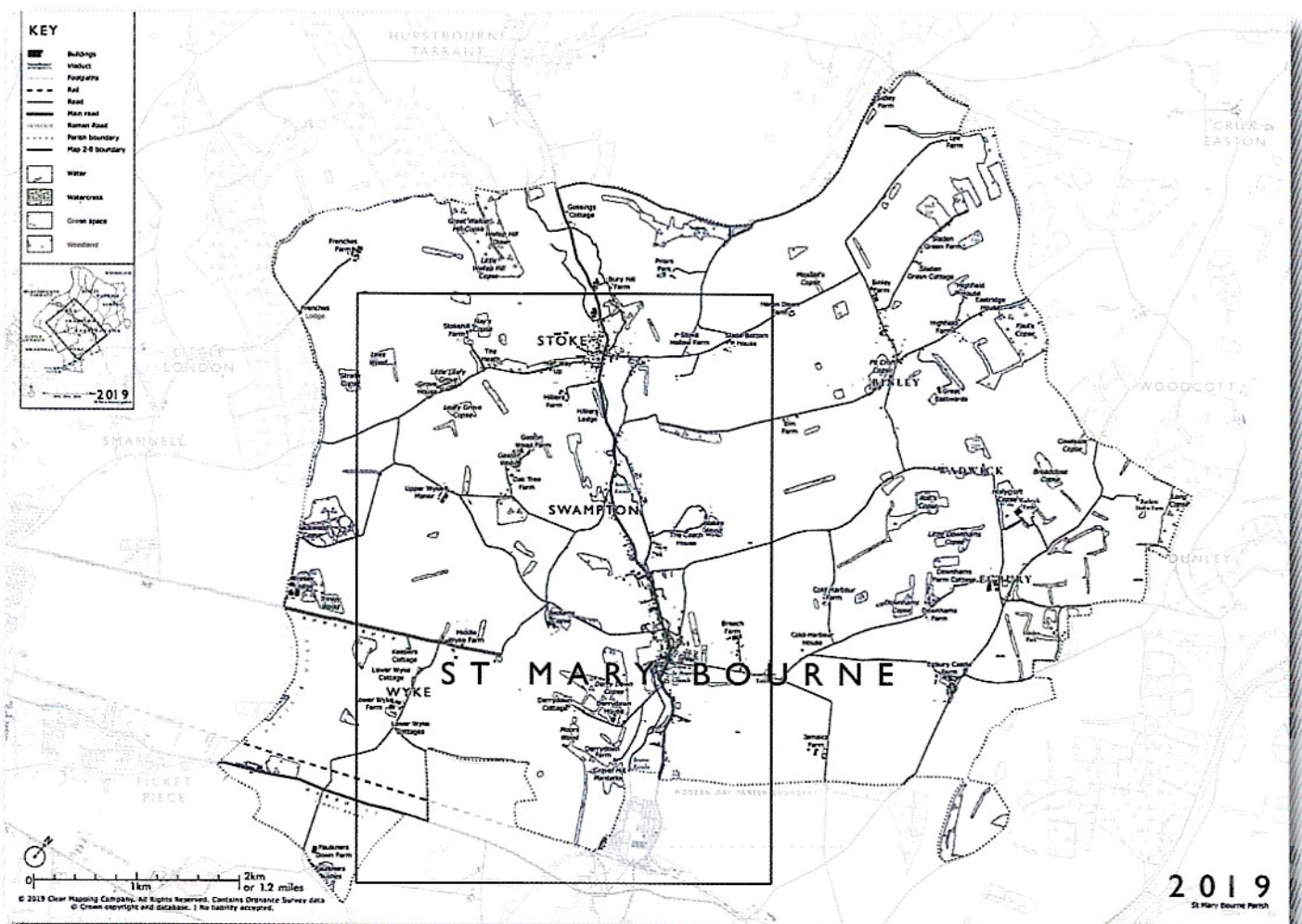
Maps Uncover the Secret History of St Mary Bourne

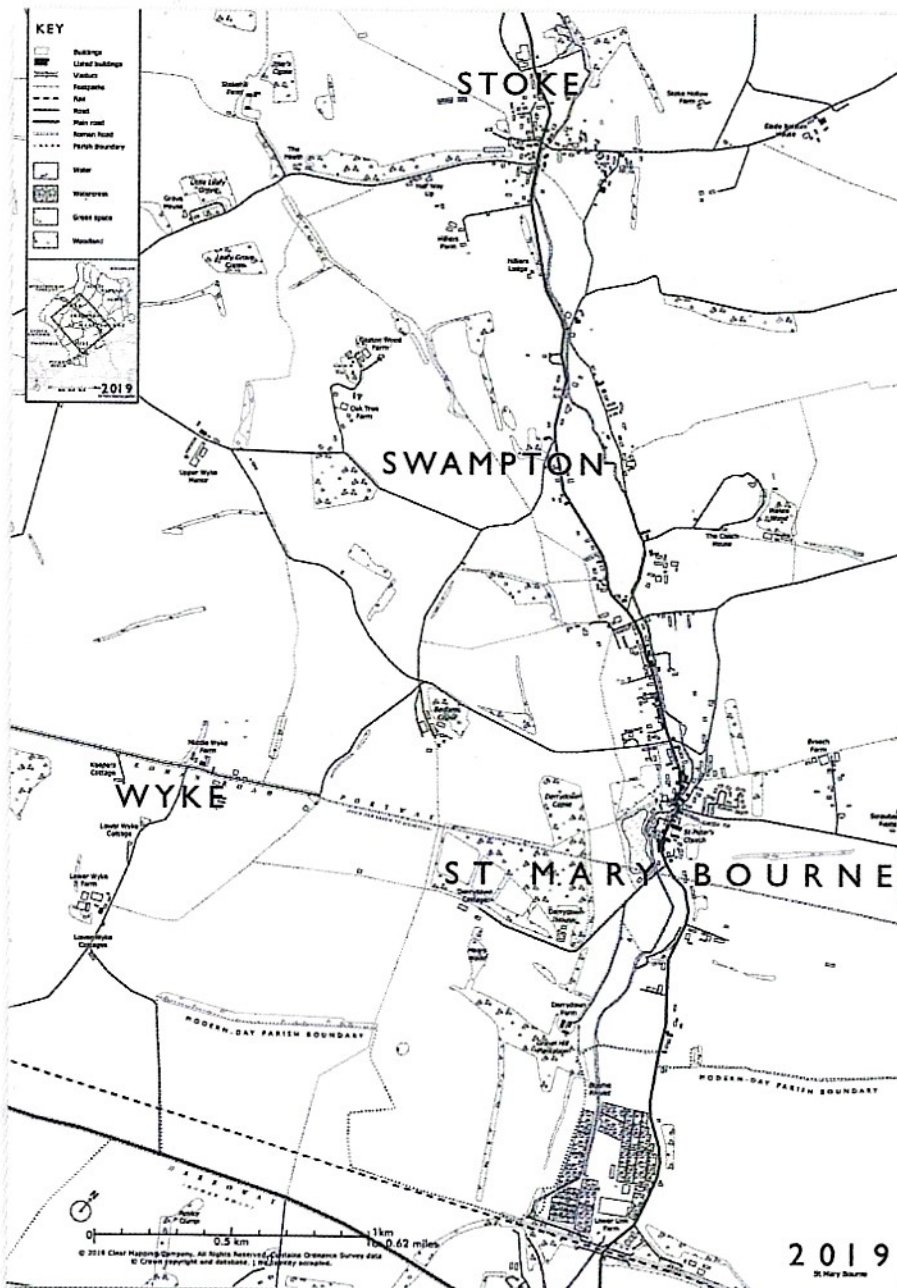
Working as a cartographer is not always a thankful task; wrangling data in a remote office distant from the original source and with an

account manager filtering requests from the client. The project for St Mary Bourne could

not be further from this type of work. The project was a fantastic opportunity to showcase datasets

Map 1 – St Mary Bourne Parish boundary and surrounding areas, 2019.





Map 2 – St Mary Bourne village, 2019.

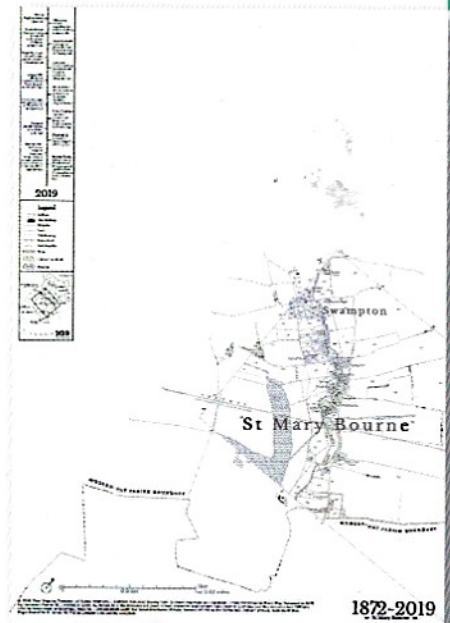
by mapping them that no-one had ever seen before and work closely with the client.

St Mary Bourne is a tiny village in Hampshire which has a chequered history of who 'owned' the village. I had a delightful trip to meet the Historian Laura Sykes and walked around the village taking photos and making notes. As a 4G drop-spot location, it was refreshing to go back to regular notebook and pen to capture the feel of the location and identify important local buildings.

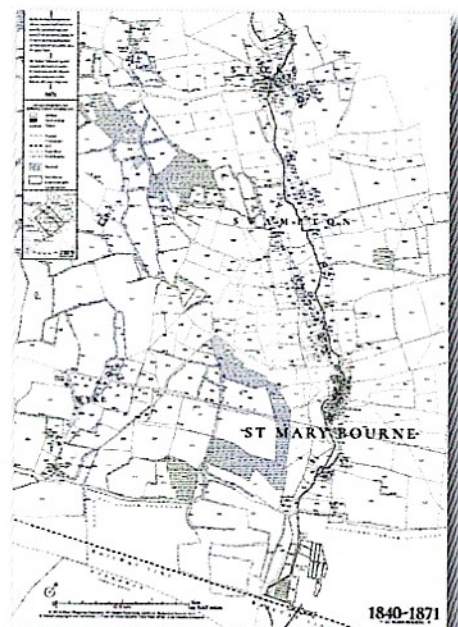
We then discussed the primary and secondary (and even tertiary)

datasets that Laura had collected over the past twenty years. There were books by previous historians, ancient maps stored in several parts, tabular data written by hand (!), tabular data typeset in books, scrapped from websites and of course, this type of project wouldn't be as enjoyable without the opportunity to fully utilise Ordnance Survey Open Data.

This mix of information has to be recorded in a way that would form a practical legacy of the research. So, each map has been developed using fonts of that era (more or less), consideration of the historical timeline and



Map 3 – St Mary Bourne village, source: Hurstbourne Priors Map. Surveyed in 1872 by Lieutenant Ferrier RE. Levelled by Lient. W. Wynne RE (OS), 1872-2019.



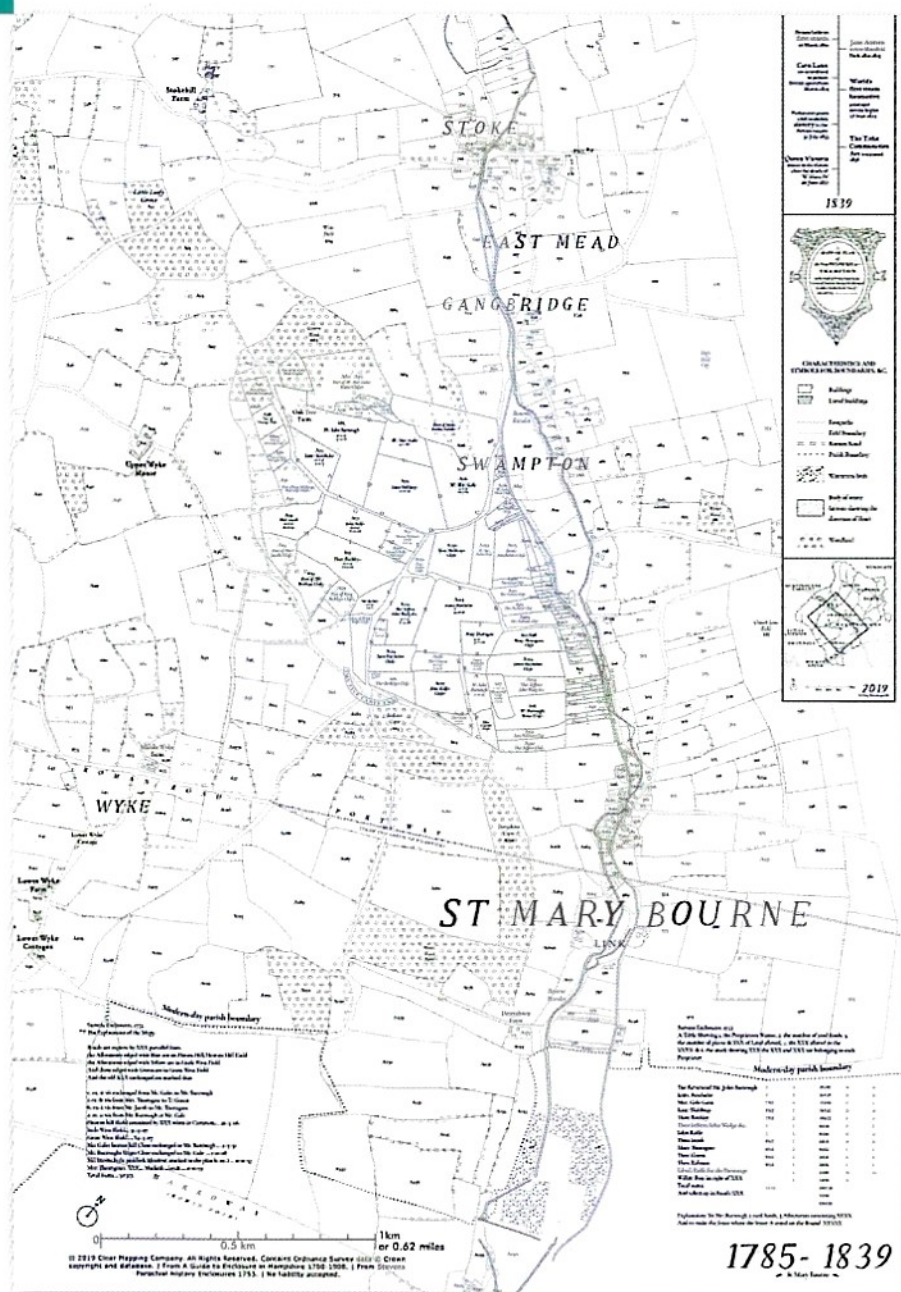
Map 4 – St Mary Bourne village, source: St Mary Bourne Tithe Map 1840, 1840-1871.

cultural/religious significance has also been taken into consideration. The maps are as follows:

Map 1 – St Mary Bourne Parish boundary and surrounding areas, 2019.

Map 2 – St Mary Bourne village, 2019.

Map 3 – St Mary Bourne village, source: Hurstbourne Priors Map. Surveyed in 1872 by Lieutenant

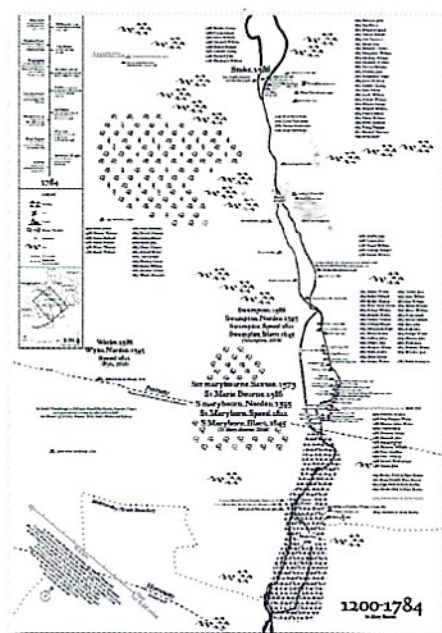


Map 5 – St Mary Bourne village, sources: A Guide to Enclosure in Hampshire 1700-1900 and Stevens Parochial History Enclosures 1753, 1785-1839.

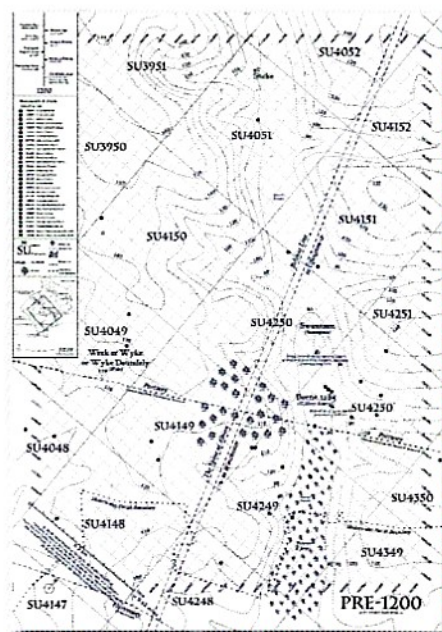
Ferrier RE. Levelled by Lient. W. Wynne RE (OS), 1872-2019.
Map 4 – St Mary Bourne village, source: St Mary Bourne Tithe Map 1840, 1840-1871.
Map 5 – St Mary Bourne village, sources: A Guide to Enclosure in Hampshire 1700-1900 and Stevens Parochial History Enclosures 1753, 1785-1839.
Map 6 – Sct marybourne village, sources: The Hampshire Hearth Tax Assessment, 1665. A Purveyance of the Royal Household in the Elizabethan Age, 17 November 1558 to 24 March 1603. The Lay Subsidy Rolls, 1586. A Guide to Enclosure in Hampshire 1700 to 1900. www.BritishListedBuildings.co.uk, 1200-1784.

1586. A Guide to Enclosure in Hampshire 1700 to 1900. www.BritishListedBuildings.co.uk, 1200-1784.
Map 7 – Borne village, sources: Ancient Paths by Graham Robb the Belinus Line. Historic England the co-ordinates of the monuments & finds, pre-1200.

This fascinating project really brings the source material to life. The maps will be printed on acetate and stored in a black art portfolio case, to be kept forever by the Winchester Cathedral to assist future historians.



Map 6 – Sct marybourne village, sources: The Hampshire Hearth Tax Assessment, 1665. A Purveyance of the Royal Household in the Elizabethan Age, 17 Nov 1558 to 24 March 1603. The Lay Subsidy Rolls, 1586. A Guide to Enclosure in Hampshire 1700 to 1900. www.BritishListedBuildings.co.uk, 1200-1784.

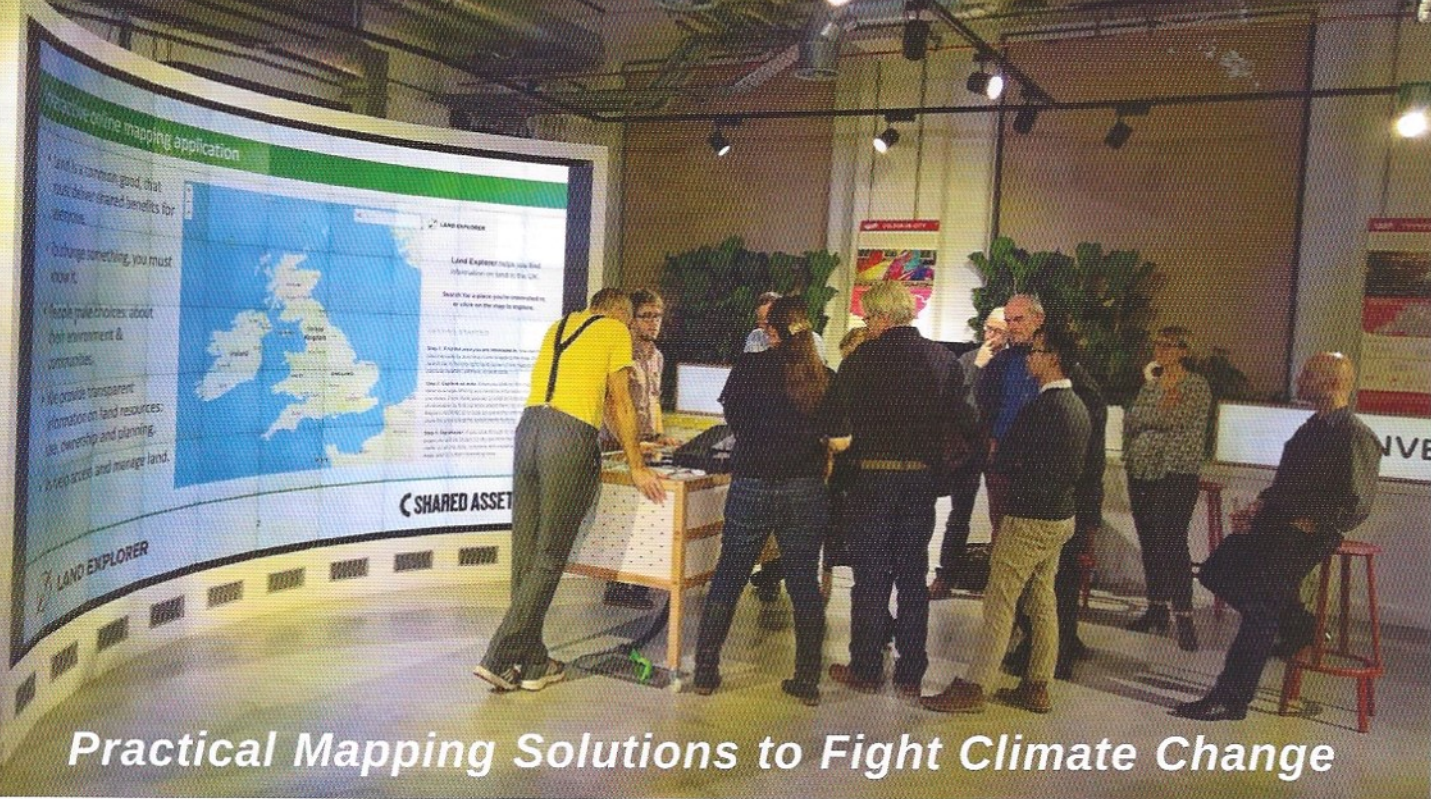


Map 7 – Borne village, sources: Ancient Paths by Graham Robb the Belinus Line. Historic England the co-ordinates of the monuments & finds, pre-1200.

By Caroline Robinson, Clear Mapping Co

Images: © 2019 Clear Mapping Co

Meeting of Maps & Minds



Practical Mapping Solutions to Fight Climate Change

We are losing 200 species every day. The amount of energy Earth is accumulating because of the greenhouse effect is equivalent to 4 Hiroshima sized nuclear bomb being detonated EVERY SECOND. That's 24 in the time it's taken you to read this sentence. Our sea level will rise by at least 20m, or maybe 100m by the year 2100. Large swathes of Africa and Asia will be temperate zones impossible for human habitation – leading to mass migration. We're suffering massive biodiversity loss and our food will be scarcer and scarcer and countless millions will starve

Screenshots of Land Explorer on a laptop, tablet and smartphone.



to death. It's no longer climate change; it's climate catastrophe – an emergency.

What are Shared Assets doing to alleviate this climate catastrophe? We gathered a group of individuals and companies to partner on an urban regeneration project – including architects, town planners, master planners, builders, energy generators, developers, and permaculture experts – with one thing on our mind; Net Zero Carbon. As the unfolding climate catastrophe bites, we cannot continue with business as usual.

Regeneration is the important word here. We are working to build in Net Zero as a key benchmark for success. If we can go further and build in Carbon Negative, even better – we need to regenerate our environment, sequestering carbon and increase biodiversity. Act as stewards for our world and our place in it. Our project is nothing, if not ambitious; but we must be bold if we are to play a part in

the rapid decarbonisation required. So, where did we start? With a map. Mapping our environment for planning is essential if we are to have a slim chance of averting climate catastrophe.

Land Explorer

Shared Assets are developing a mapping application called Land Explorer (www.landexplorer.cc), which supports communities work towards regeneration. Land Explorer shows greenbelt and brownfield sites, agricultural land classification, soil types, flood data, sites of special scientific interest and special areas of conservation. Over 30 Local Authorities have now declared a climate emergency and on Friday 29 March 2019, shadow environment secretary Sue Hayman declared a Climate and Environmental Emergency asking if the Conservatives would join (Labour) in their call.

The economic and policy drivers of decarbonisation have shifted. We must adapt, build in

resilience, restore and regenerate our environment and culture, while meeting the needs of our communities for food & water security, energy, jobs, housing and business. Facing this new paradigm, we must ask questions about what we're mapping, why and how? What information do practitioners and communities need to act quickly? We can use planning to fight climate change, but it must be a fluid process. No longer static; changing to our needs and the rapidly shifting climate. We can use maps to plan, educate, communicate and measure our progress. Find and locate sites for sustainable energy, plan our housing needs with suitable green spaces and record carbon sequestration by plants and in our soil.

We must leverage investment in bold climate action over the next five years to transform our economy, including software and data. How we head towards Net Zero, de-carbonise our economy and regenerate our environment, is the key question for our generation. We have a very short time. We have an opportunity to act now to deliver an unprecedented mobilisation of resources to prevent climate

breakdown, reverse inequality, and heal our communities. For us to flourish our systems thinking must expand to include things like Bioregions and we must not only map our watersheds, foodsheds and fibresheds, but make this data easily accessible to our communities to see their future in our world.

"A bio-region is a land and water territory whose limits are defined not by political boundaries, but by the geographical limits of human communities and ecological systems. Habitats, and ecosystems; [that] support important ecological processes... [in] this ecological and social framework, governmental, community, corporate, and other private interests share responsibility for coordinating land-use planning for both public and private land and for defining and implementing [participatory planning] options that will ensure that human needs are met in a sustainable way." – Bioregional Learning Centre.

That's why we're designing Land Explorer with permaculture principals in mind, adding data on rainfall, water flow, sunlight, wind direction, soil qualities, biodiversity and natural capital.

Combining data from government agencies and local authorities with crowd sourced data: finding spaces for urban farming and allotments, new homes, mapping substations capacity, renewable energy generation and the possibilities for microgrids.

The UN's Intergovernmental Panel on Climate Change report last autumn warned that humanity has just 11 years remaining to take emergency action in order to prevent catastrophic climate breakdown.

We have a chance, however slim, of keeping the worst affects at bay and can play our part by acting now. How we, and our communities, use the land around us and manage our planet's finite resources is integral to any solution. How we present data from organisations like the Centre for Sustainable Energy data, Environment Agency, Natural England, Ordnance Survey, and the Land Registry; and combine this with Local Authority data on economic assessments is integral to developing neighbourhood and local plans – informing better decisions and measuring progress over time.

Shared Ownership

Cooperative ownership of such a platform is important (as a resource and digital commons); as data is now where utility value resides. It's critical to be custodians of our data for future generations. Finding a way between the state and the market to combine government data, with crowd sourced and other information. So at Shared Assets, we're evolving Land Explorer to provide tools for Permaculture Design Environments, helping to find land suitable for self-builders and Community Land Trusts for housing (delivering net zero carbon homes), sites suitable for sustainable energy and spaces for growing healthy food; delivering a cooperatively owned community asset, to help us plan.

Young students learning about climate change while using the Land Explorer app on a tablet.



We'll help plan and measure progress towards delivery of sustainability goals at local level to make regeneration a living process – not a static plan. We can capture environmental data in real time, through the Internet of Things to measure and compare, curate information from sensors and drones, and most importantly make this data public; democratically & cooperatively controlled.

We can be empowered by our data – to change something, you need to know it; data helps us measure and improve. It helps us communicate. To move towards decarbonisation, degrowth and restorative culture, we must create a digital common ground; finding a way between the state and the market to combine government data, with crowdsourced and other information; to be stewards of our data for future generations. Maps

are about where we're going and how we're going to get there, but also where we've come from and how far we've travelled; mapping not just the geography, but our progress in how humanity responds to our greatest challenge ever.

It's a start. "It'll take us all and it will take us the rest of our lives, but that's the point." – Cradle to Cradle Design.

"I don't want you to be hopeful, I want you to panic. I want you to feel the fear every day and then I want you to act. Either we choose to go on as a civilisation or we don't." – Great Thunberg.

This isn't hyperbole, the science is indisputable and it's terrifying.

Act Now

"Global warming can no longer be described as a future event. It is now driving a change in the

climate system. So, we are now on the clock if we want to break the fossil-fuelled economic paradigm that has served us so well for the past 150 years. We risk locking in emissions that cannot be easily unwound later... we are on track for 3C... a destructive level of warming. And we are nowhere near – yet – the emissions trajectories for the 1.5C and 2C goals in the Paris Agreement." – Committee on Climate Change's Chief Executive, Chris Stark.

"Both 1.5C and 2C would take humanity into uncharted and dangerous territory because they were both well above the Holocene-era range in which human civilisation developed." James Hansen, former Nasa scientist who helped raise the alarm about climate change.

By Julian Thompson, Shared Assets

The BCS are looking for a convener to support their popular GIS Special Interest Group (SIG).

This SIG is a research-based group providing a point of contact and discussion for those engaged in any aspect of Geographical Information Systems and associated sciences.

The aim of the SIG is to:

- Promote activities and events such as seminars, workshops, visits and open meetings during the Annual Symposium
- Encourage participants in its meetings to publish their ideas and findings in the outlets provided by the Society
- Seek to publish an occasional newsletter, distributed free to members of the BCS and on subscription to others.

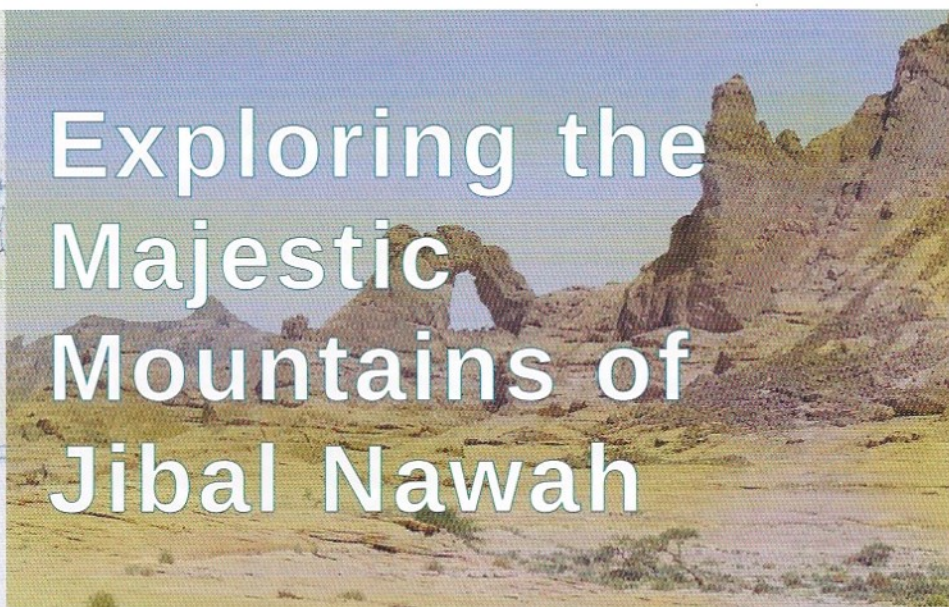
This is a great opportunity to become part of the wider BCS community and actively help with the Society's goals and programme.

If you are interested, please email Paul Naylor (BCS Programme Chair) at paul.naylor@os.uk





Exploring the Majestic Mountains of Jibal Nawah



A region of deep beauty that entices desert mapmaker Abdullah Al-Sayari to return again and again. He describes one of his favourite places, the mountains of Jibal Nawahat

The breath-taking beauty of the region between Hail and Taima keep me going back time after time, and each time I return I discover another hidden wonder that makes each visit fresh and memorable.

My most recent trip to Jibal Nawahat was in March, a time I enjoy visiting the area because of the mild weather and gentle breezes. And the seasonal rains will have visited, refreshing the plant life and adding to the area's splendour.

Setting Out

Setting out from Hail, our route took us westwards along the Hail-Medina road. After about 40km we turned right onto the Hail Al Jahra road for about 230km, continuing west until we turned off onto an unpaved road heading north towards Hufat Laqt, where we had ended our previous journey (see Saudi Voyager 12).

After driving 35km along this unmade route, we came to an area of rocky hills interspersed with sandy plains where we chose to camp for the night.

We were close once again to Hufat Laqt, so early in the

morning we re-explored what is another of our favourite places. The whole area was clothed in green after the rains adding to the colour and beauty, so we took our time re-examining the inscriptions on the rocks and adding to our portfolio of photos.

Reaching the Mountain

That afternoon we continued on our way, driving north eastwards through the Al'azamyat mountains across an area of sand dunes, in the midst of them called Wasg Al'azamyat. With the high grounds of Zalma' to our right and Qata' al Bedoun on our left, we came in sight of the Jibal Nawahat mountains, where we camped and basked in the picturesque views.

Each of us wandered off from our campsite to photograph the scenery and enjoy a stunning sunset – as the sun dipped between Jibal Nawahat, the silhouettes of the peaks resembled a magical skyline of castles and rooftops.

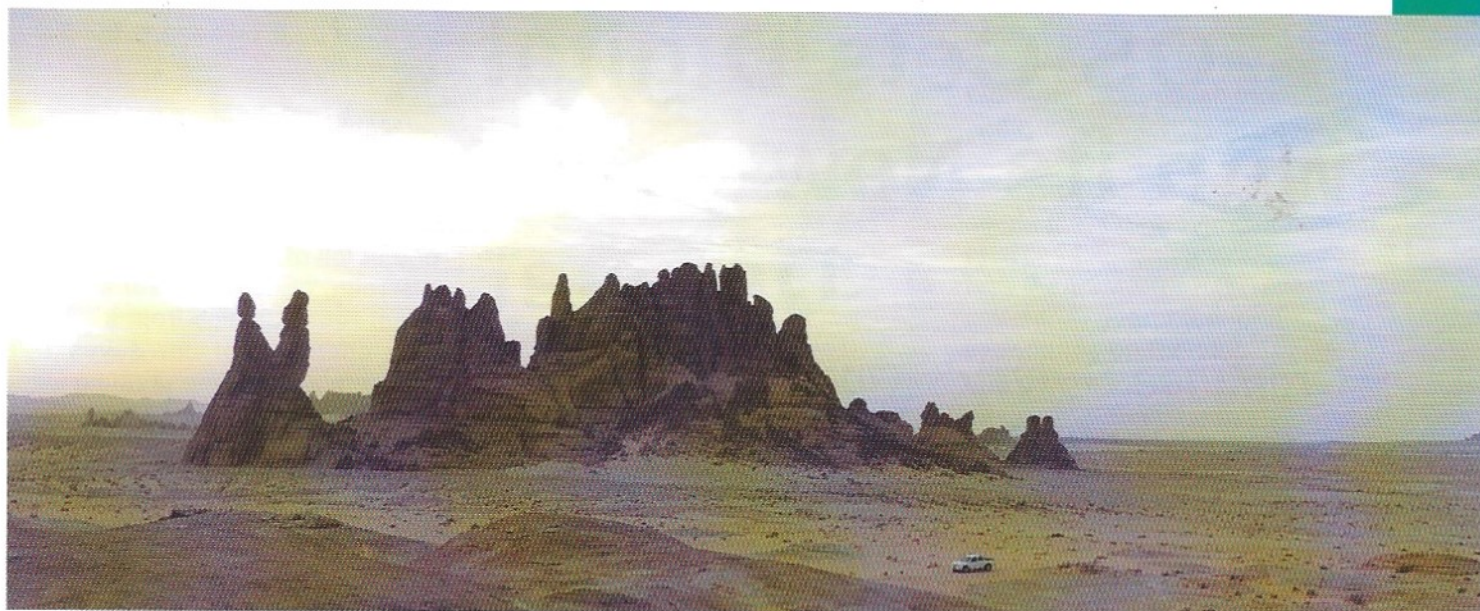
In places, the evening sun on the mountains made them look like groups deep in conversation – no wonder then that in Arabic 'nawahat' means women weeping for their departed relatives.

Indeed, letting our thoughts run wild, the mountains became anything we imagined – whispering strangers, Egyptian obelisks, palaces, buildings, and so forth, making this a wonderfully evocative and romantic site.

The next morning we broke camp and headed north towards the old well of Ba'ir Hzaba, which dates from Thamud times – the pre-Islamic people who originated in southern Arabia, then moved north to settle on the slopes of Mount Athlab near Mada'in Saleh, before, according to legend, they were destroyed by a sound wave.

Ba'ir Hzaba is a natural rocky fissure approximately 130 metres deep which has been an important water source for millennia – especially as drilling in this rocky terrain is so difficult. The opening is protected by an iron lid to prevent livestock falling down and to keep it sand-free.

On our way to the well we came across a great swarm of locusts as they were laying their eggs in the sand – a rare opportunity for many of us to see this with our own eyes for the first time. We had all heard stories of watching



such events from our parents or grandparents – and now we can tell our own first-hand stories to our children and grandchildren. But unlike our forefathers, we could film it on our smartphones!

After studying the locusts, we took a small deviation 25km north on a rough track to Ba'ir Al Husanah, another ancient Thamudic well, some 130km in depth. Also a natural fissure, this time the opening has been widened to ease water extraction, and has been fenced in to safeguard passing animals.

We decided to spend the night near the well and spent the next

morning poking about several nearby ancient ruins, which show how long this place has been an important watering hole.

Our Last Night

From there, we drove westwards towards the Helwan and Akbad mountains – famous landmarks on the ancient caravan route. Before passing them, we reached the beautiful Gharamil Musabbah, which is quite similar in shape to Jibal Nawahat. Here we decided to spend our last night so we could enjoy the tranquillity of the area.

The following morning, we headed south west towards Jabal Berd –

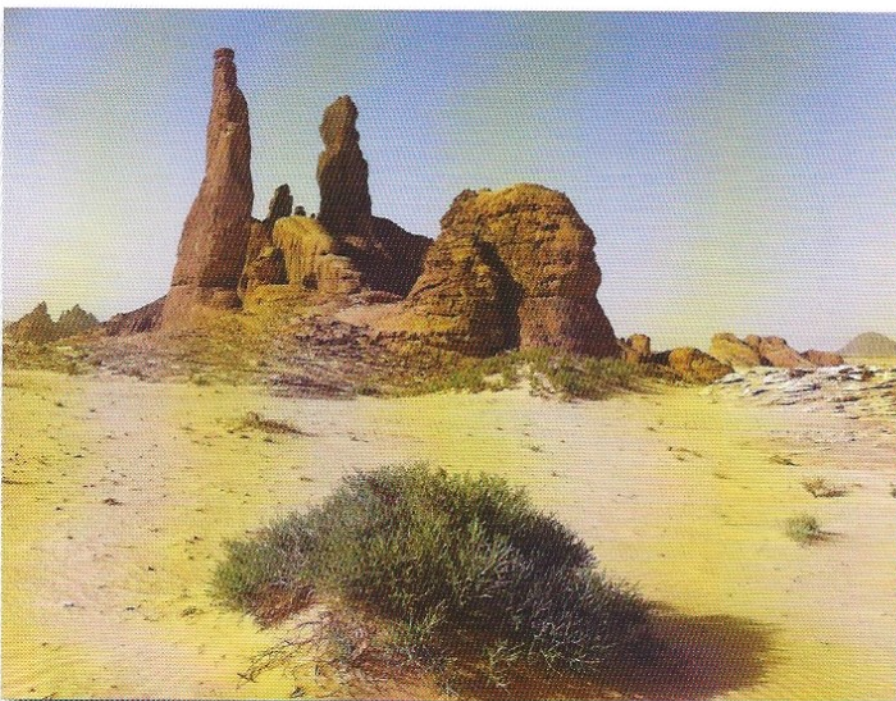
a distance of about 20km. Along the way we passed several other mountains and hills eroded into stunningly beautiful shapes, and then, after another two hours along meandering and rugged roads, we finally reached Jabal Berd. Mentioned by Czech explorer Alois Musil in his 1915 Arabian Desert, this has always been an important waymark on the Hail to Al'ula caravan route.

There we paused to explore and enjoy the scenery, discovering that the fabled water sources that made this place so famous are now sadly exhausted. However, this mountain and the surrounding area is rich in Thamudic inscriptions, and I managed to discover examples new to me – of two dancers, one dancing upside down on his hands, another of a camel suckling her young, and a third of a warrior armed with a long spear with accompanying text.

The whole area between Hail and Taima has long been a favourite of mine and will long keep me returning. It is an area of striking natural beauty that is also rich in fascinating history.

It really is worth getting off the beaten track and immersing yourself in the sights, sounds and feelings of this historic area.

By Abdullah Al-Sayari



OS Gets Digital with its New Open Dataset

Ordnance Survey's Open Zoomstack a Game Changer for UK Mapping

Through the ages, Ordnance Survey (OS) has refined and developed its beautiful cartography to create mapping that's as easy to recognise as it is easy on the eye. Now, well into the 21st century, that tradition is continuing with the release of OS's Open datasets to create a new geospatial mapping product called OS Open Zoomstack (www.ordnancesurvey.co.uk/business-and-government/products/os-open-zoomstack.html). The new dataset – described by one reviewer as a “game changer in UK mapping” – has joined-up the popular visuals from OS

cartography and digital mapping for online, offline and mobile devices – providing better consistency at every level, whenever someone scrolls in or out of the map on screen.

OS Open Zoomstack is now available for anyone who wishes to use geospatial data to create mapping products for apps, websites or offline. It allows users to take the giant vector basemap of Great Britain, containing up-to-date authoritative OS data for buildings, roads, and greenspaces in the country, and

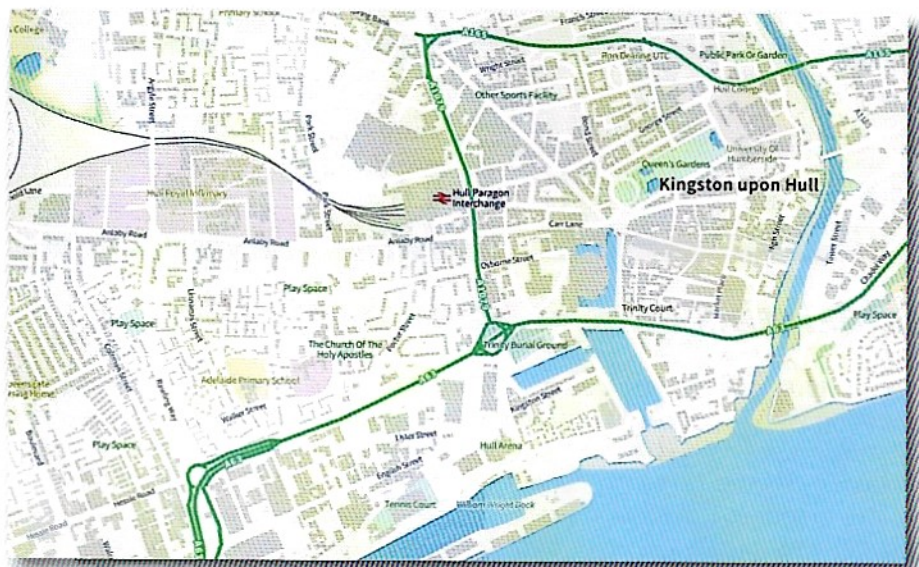
produce their own maps quickly and easily.

Available in two flavours, GeoPackage and Vector Tiles, users can tilt or pan to create a 3D effect, zoom in or out easily in one scroll of a mouse or touch of a screen, or fly anywhere around Great Britain, which from a developer point of view saves a huge amount of time creating stacks from shapefiles previously provided as individual products from OS Open Data.

When users start creating maps with OS Open Zoomstack for the first time, they can select from four stylesheets created by OS cartographers to get going immediately. These are light, night, outdoor and road, all of which are available on Github (<https://github.com/OrdnanceSurvey/OS-Open-Zoomstack-Stylesheets>). For example, one user may pick the light style to make it easier to identify overlaid datasets, while another may opt for outdoor or road styling because the mapping on screen appears stronger. All four styles ensure a consistent template and

OS Open Zoomstack map with a Light Style.





OS Open Zoomstack map with a Outdoor Style.

have already proved popular with users skilled in cartography and web development.

OS Open Zoomstack is flexible for users who wish to create their own custom cartography, in a variety of commercial and open source software. If someone wishes to create their own style (e.g. to use their own brand colours), they can adapt the stylesheets provided by using them as a starting point. It is also easy to display third-party data on the basemap. The data is flexible and users can customise it by turning layers or features on or off.

The use of Vector Tiles has other benefits beyond styling. The file



OS Open Zoomstack map with a Night Style.



OS Open Zoomstack map with a Road Style.

size of the high-resolution data contained within the tile makes OS Open Zoomstack more than just a map. There is no longer a need to crunch thousands of data files – it does the job as one single file. OS provides it in a MBTiles file, which works out at less than 3MB for full GB coverage, guaranteeing a slick experience on the web, mobile and offline.

The growing popularity of Geopackage among OS users has also seen OS introduce OS Open Zoomstack in this format. Geopackage is an OGC standard and allows more complete data analytics thanks

to the volume of data it can hold.

Since its launch in January 2019, GIS software providers have been keen to get their hands-on OS Open Zoomstack. Esri is embedding OS Open Zoomstack vector tiles, while Cadcorp has already embedded it into SIS Desktop 9 and the data is also available via MapTiler.

OS Open Zoomstack is a core open data product for OS and will be refreshed and updated every six months. It is available to download at www.os.uk/zoomstack.

By David Jones, Press Officer at Ordnance Survey (OSGB)

Refugees from Eastern Counties Map

Evacuation of the Lincolnshire Coast in Case of Invasion, 1916

This Great War map was prepared by the County Chief Constable's Office, St. Mary's Gate, Derby in January 1916. It depicts the planned routes of movement of 'refugees' from eastern England for the sanctuary of Derbyshire in the event of a hostile landing on the Lincolnshire coast. Eight planned evacuation routes, each following the network of minor roads and byways (main roads and railways were to be strictly off-limits to civilians in the event of an invasion), are labelled to the right of the map (Route 1-8). These routes are shown against a backdrop of administrative units (Petty

Derbyshire, convened a county meeting with the specific purpose of making provisions for an invasion. As the Duke explained to the meeting: ...although the county was situated remote from the seaboard it could not remain indifferent to the possibility (to place it no higher) of an invasion. (Hear, hear). The problem which would have to be faced in such an event, was different from that which would be presented in those with a coast line, but it was a problem nevertheless. If there was any big movement of population from the coast, they [Derbyshire] would have to deal with it, and there were also the

1916 – the month to which the map relates. The conference concluded that a German invasion force of up to 160,000 could appear anywhere between the Wash and Dover without warning (Moon, 1968). The identification of the Wash as the most northerly point for a large-scale invasion on the Lincolnshire coast had no doubt informed the planning of the mapped evacuation routes; back-projection of the vectors running through Nottinghamshire and Leicestershire identifies a convergence point on the Lincolnshire town of Boston and the area of South Holland, adjacent to the Wash.

“... the map... provides insight into the preparations of a county that... was selected as a centre of refuge for evacuees.”

Sessional Divisions) around which local emergency committees responsible for the development and implementation of local evacuation plans were organised.

During the war, the British Constabulary worked with county and local emergency committees and military authorities to develop plans for the evacuation of coastal areas of England in the event of an enemy invasion (Moon, 1968; Pennell, 2008). What makes the present map especially interesting is the insight it provides into the preparations of a county that, by virtue of geographical convenience in the English Midlands, was selected as a centre of refuge for evacuees.

These preparations can be traced to the first winter of the war. On Christmas Day 1914, the Duke of Devonshire, Lord-Lieutenant of

matters of the disturbance of traffic on the railways... and the keeping of the roads clear (The Derbyshire Courier, 1914, p. 1).

The same meeting passed a resolution for the formation of a Derbyshire volunteer corps for home defence. When called upon, members of the corps would render service at the county border by leading evacuees down byelanes and across fields – thereby keeping the main roads and railways clear for the free passage of the military – and to guide the evacuees to their lodgings (The Derbyshire Courier, 1914, 1915).

By the spring of 1915, the military situation had begun to stabilise. Following a re-organisation of home defence, the first of several national inter-service (Admiralty and Army) conferences on invasion was held in January

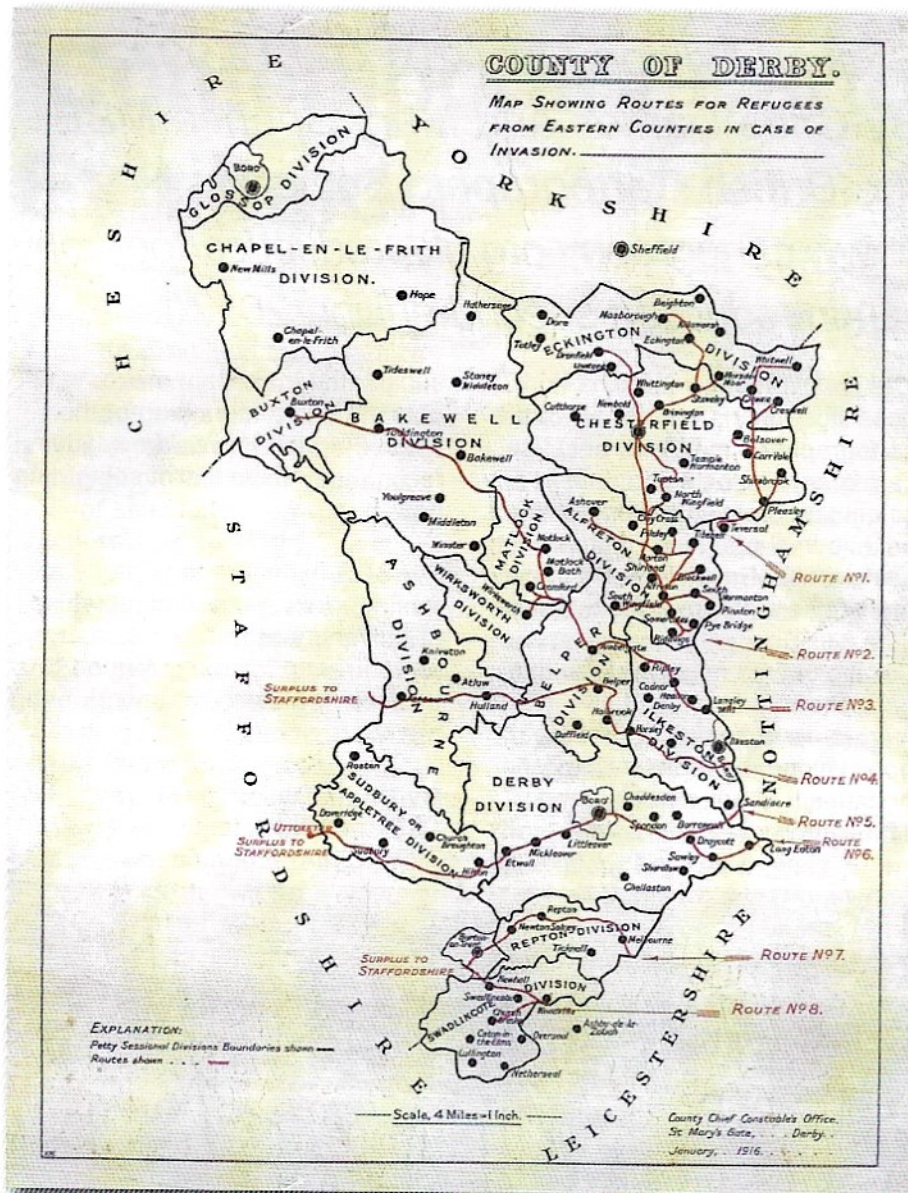
But where were the evacuees to be lodged once they had reached Derbyshire? Reports in the local press point to the intended use of private residences in the first instance. In mid-February 1916, the Ripley and Heanor News reported that a canvass had been made of householders willing to accommodate evacuees in the Ripley district, situated on evacuation Route No. 3. “There is not the slightest necessity for any person to become nervous” the report stated reassuringly; “the canvass is merely a precaution against the possible but improbable” (Ripley and Heanor News, 1916, p. 2).

Further to the south, on evacuation Route No. 7, a similar canvass of the residents of Melbourne and the district was taken at about the same time (The Derbyshire Advertiser, 1916a). Alongside private residences in these and other districts, council and church schools were also secured for the purposes of billeting (The

Derbyshire Advertiser, 1916b). Even then, the sufficiency of accommodation along some of the evacuation routes was uncertain as evidenced by the contingency ("surplus to Staffordshire") at the western end of Routes 4-8.

The authorities were acutely aware of the public disorder and panic that could accompany an invasion (Mitchinson, 2005; Pennell, 2008). As if to quell any such panic, the map instils a reassuring sense of planning, order and control in the evacuation process. In the event, of course, the Derbyshire evacuation scheme was never realised. Under revised instructions dated 16 August 1916, the Home Office cancelled all plans for civilian evacuation; civil populations were to be encouraged to remain, wherever possible, in their homes in the event of an enemy invasion. This departure from previous policy came on the command of the Army Council and, apparently, reflected the prevailing military conditions of the time (Home Office, 1916).

By Matthew Smallman-Raynor,
Head of School and Professor of
Analytical Geography, School of
Geography, University of
Nottingham



Map of Derbyshire, showing the planned routes for the movement of evacuees (referred to in the map title as 'refugees') from Lincolnshire in the event of a German invasion of eastern England in the Great War. The map was prepared by the County Chief Constable's Office, St. Mary's Gate, Derby and is dated January 1916. Scale: 1 inch to 4 miles (1:253,440). Dimensions: 368 × 490mm. Paper on cloth.

References

- Home Office (1916). Emergency Measures in the Event of a Hostile Landing. Revised Instructions for Emergency Committees. a (33)1241 Pk 159 1500 8/16 E&S. Reproduced in www.henhamhistory.org/HenhamImages/ww1%20evacuation/SEAX%20docs/evac%2014.jpg (last viewed 03/01/19).
- Mitchinson, K.W. (2005). *Defending Albion: Britain's Home Army 1908–1919*. Basingstoke: Palgrave Macmillan.
- Moon, R. (1968). *The Invasion of the United Kingdom: Public Controversy and Official Planning, 1888–1918*. Unpublished PhD thesis, King's College, University of London.
- Pennell, C. (2008). "The Germans have landed!" Invasion fears in the south-east of England, August to December 1914.' In H. Jones, J. O'Brien, C. Schmidt-Suppran eds., *Untold War: New Perspectives in First World War Studies*. Leiden: Brill, 95–116.
- Ripley and Heanor News (1916). 'Notes.' 18th February, 2.
- The Derbyshire Advertiser (1916a). 'Melbourne.' 12th February, 10.
- The Derbyshire Advertiser (1916b). 'Derbyshire Education Committee.' 31st March, 4.
- The Derbyshire Courier (1914). 'Preparing for invasion. Derbyshire's plan against a raid.' 26th December, 1.
- The Derbyshire Courier (1915). 'Chesterfield's new Home Guards. Unanimous town's meeting. What to do and how to do it. Colonel Brooke-Taylor explains.' 23rd January, 1.

Review of Cartography: An Introduction

This illustrated and informative guide to cartography is packed with all the essentials and detailed technical information that anybody studying at Advanced or Degree level geography will appreciate.

The book opens with a definition of a map that supports the theory so instantly that it will grab the attention of spatial minded individuals. The book cleverly divides into different sections that are well illustrated and allow the reader to pick and choose what is relevant to them at the time.

Depending on your study level, or general interest, you will find a section that you can relate to. The sections include explaining map projections and grids, cartography symbology, GIS, and even map design.

*Second Edition (July 2017), £12.99
By Giles Darkes and Mary Spence MBE,
the British Cartographic Society
(www.cartography.org.uk/product/cartography-an-introduction-second-edition-2017/)*

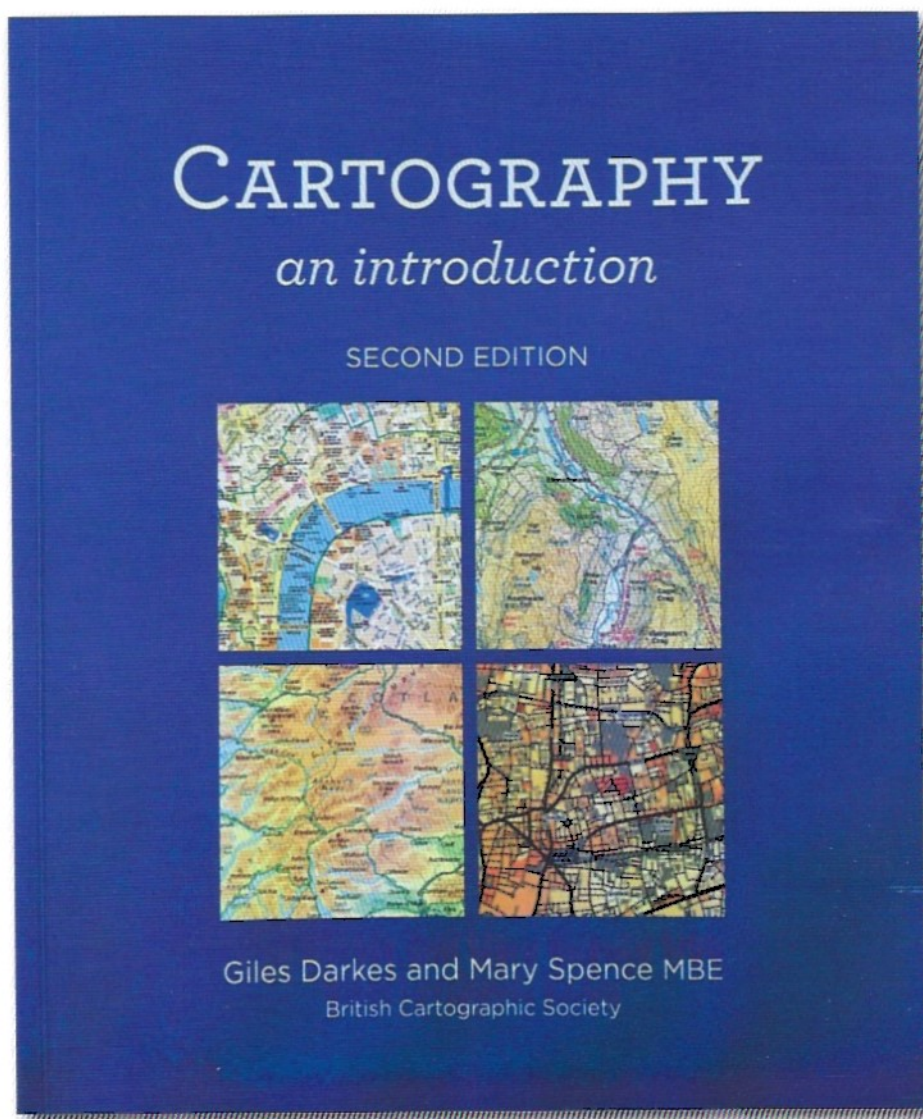
The smart way in which the book uses illustrations will appeal to the cartographer's mind set, because cartographers including data scientists, are clearly people who believe in sharing information using maps. Ensuring that all practitioners create the best maps.

For those who might pick up this book that are less spatially literate, I am confident that the book will hold people's attention because it is not a heavy read. The lightweight nature, yet

substantial in content makes it not only attractive to pick up of the shelf, but also leaves the reader feeling they have learnt something new.

For BCS members, it is partly a reminder of what we learnt whilst at university or reinforces what we are currently learning. A good text book for members and non-members alike.

By Philip Dellar, Technical Director, Verisk, GeoInformation



'Contemporary Cartography' Exhibition

3 June to 30 August, Opportunity to Sponsor, Take Part or Visit the London Festival of Architecture 2019

Mon-Fri: 09:00-18:00 Sat: 10:00-17:00

Contemporary Cartography is an exhibition that examines how we navigate, document and shape the built environment. It is a celebration and interrogation of mapping, framed through the work of selected contemporary practices.

The exhibition proposes a re-engagement with maps and acts of cartography as creative, generative processes – positive cultural tools with the potential to transgress boundaries and reimagine our environments. Through the projects displayed, it hopes to encourage a reflection on different practices of spatial representation, what they tell us about the world we live in and how they help transgress 'boundaries' in a variety of senses – both physical and social.

The projects exhibited explore how cartography opens up new ways of seeing complexity in the world and engenders multiple design possibilities. They address

the technologies and measuring tools of cartography, questioning their legacy and influence on our experiences of the landscape. The exhibition examines how maps can reconceptualise spatially situated boundaries by embodying multiple points in time – recording the past, representing the present and projecting the future.

The associated event programme will explore broader themes featuring international projects, designers and manufacturers. As the home of key industry organisations participating in LFA, the Building Centre will be a hub for the industry during the summer. The Building Centre is a central London gallery promoting innovation in the built environment. We create an internationally recognised programme of events and

exhibitions to inspire, inform and educate. Our campaigns influence our core audience of construction industry professionals while also raising awareness and delivering information to the general public.

Want to get involved? We are looking for:

Exhibition supporter = £1,300 + VAT
Include your logo across our exhibition promotion:

- Logo featured on the exhibition introduction panel
- Logo featured on exhibition handouts
- Logo included on associated event e-shots
- Website link on main exhibition website
- Thanked on social media

Event supporter = £5,500 + VAT

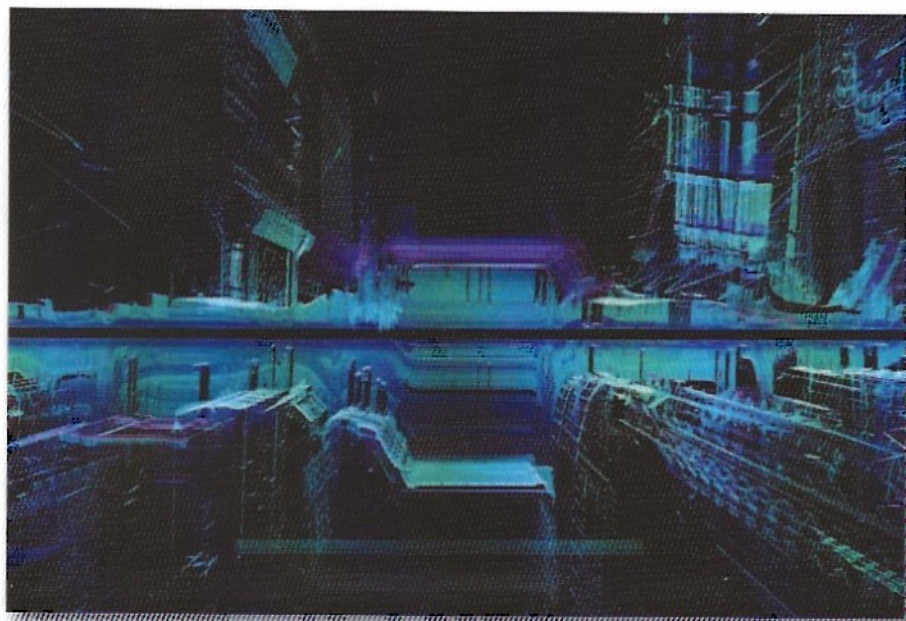
All the above plus work with us on a breakfast or evening event to explore a key topic at the heart of your business. The Building Centre will work with you to map out themes in advance and invite inspirational speakers to attract up to 200 guests. The Building Centre will also write an online article about the event which will feature the work of your company.

Product Showcase

In addition, there is an opportunity to showcase products at the Building Centre. From July, we can showcase and promote relevant products in association with the exhibition. For more details, visit

www.buildingcentre.co.uk/exhibitions/contemporary-cartography. Contact Jenny Watt to discuss options at jwatt@buildingcentre.co.uk - 0207 692 4000

© 2019 ScanLab. Originally Produced for The New York Times Magazine.



Ex-Restless Earth Co-ordinator Wins Best New Business Award 2019

Alice Gadney's Mini Mapmaker Company Wins on International Women's Day 2019

Since September 2016, Alice Gadney has been teaching small children about maps through the concept of Mini Mapmakers. She has created a wide array of workshops and exciting resources – all map and world themed. The workshops support teachers and the UK curriculum – they also support home-educated children too. The initial trial involved a local school with 90 4-year-olds (three classes of 30 students). Over 2,800 children have met 'Captain Alice' and had fun at her workshops from Cumbria to London, at schools, clubs, outdoor centres, fairs and even country parks! Over 1,000 adults have also joined in and learned about maps along the way.

Alice Gadney, former Editor at



Maplines and Restless Earth Co-ordinator, started the year being nominated in xyHts as '40 under 40 Geospatial influencers of 2019' and now has achieved something special on International Women's Day 2019. Mini Mapmakers has been awarded 'Best New Business 2019' by Bedfordshire Business Women!

"Captain Alice has a superpower: she has taken all the skill and art of making and reading maps and made it relevant to today's toughest audience – children! In the age of technology, she has re-introduced to them a world away from a screen. An outstanding winner with passion and enthusiasm for map reading and making!" said the Adjudicator of the Bedfordshire Business Women 2019 Awards.

Volunteering to the Restless Earth programme at the BCS really ignited Alice's passion and deep sense of duty to communicate the importance of maps to the younger generation. In the times of increasing screen time – getting back to basics is key – this was evident in the super Restless Earth workshops.

Although the work has been fulfilling, it is not without its challenges: taking on the youngest of school learners – Reception age to 4-years-old – is totally different from teaching teenagers. Learning how to adapt



the classes in the way you speak, describe and explain different elements is very different to working with a 4-year-old.

"When running your own business, amends to get done instantly can be a challenge. The teachers gave super constructive feedback, but more importantly all the children really enjoyed it. I would like to thank those who have supported me along the way from Ordnance Survey and Dennis Maps, HPUK, Harper Collins Reference, Jane Tomlinson – Artist, xyHt, Garsdale Design and many more small businesses that helped create an amazing opportunity to communicate something very important in small children's lives! Set them on the right path with the right tools and they will go far!" says Alice Gadney.

Alice is looking to grow her community of Mini Mapmakers, so if you would like 'Captain Alice' to visit your local school or youth group, then get in touch with her at alice@minimapmakers.co.uk or for more details visit www.minimapmakers.co.uk.



SAVE THE DATE!

BCS - SoC Conference

11th - 12th September 2019

ORDNANCE SURVEY HQ
SOUTHAMPTON SO16 0AS



PROGRAMME

11th September: BCS Pre-conference Special Interest Groups
Map Curators' Group Workshop • Better Mapping Seminar

12th September: BCS - SoC Conference 2019
Keynote • Talks • Pecha Kucha • Awards Ceremonies • Panel Session/Debate

Look out for more info and agenda at
www.cartography.org.uk

**CALL FOR
ABSTRACTS**

Deadline:
21 Jan 2019

GEO

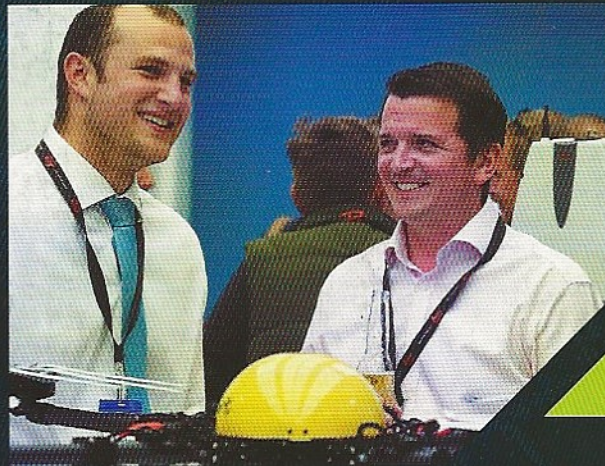
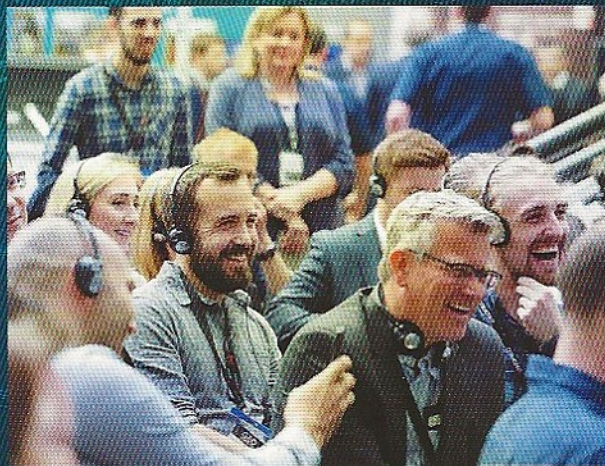
BUSINESS 2019

LONDON • UK **21 - 22 MAY**

**The geospatial event designed for
everyone involved in the gathering,
storing, processing and delivery of
geospatial information**

➔ GeoBusinessShow.com

Exhibition • Conference • Seminars • Workshops • Networking



BIM



GIS &
Big Data



Earth Obs
& Satellites



Instrumentation
& Monitoring



Laser
Scanning



Mobile
Mapping



Smart
Cities



Surveying



UAVs



Visualisation
AR & VR

Organised by

diversified
COMMUNICATIONS ■ UK



Background image provided by Ordnance Survey stand L10