Wales Energy Conference
27th April 2016
Novotel Hotel, Cardiff, CF10 4RT

Speakers and Chairs: Biographies and Synopses

Session 1: MARINE ENERGY

Session Chair: David Rowlands BEng(Hons) CEng CEnv FICE, Chairman ICE Wales Cymru

I am a Chartered Engineer and Environmentalist and a Fellow of the Institution. I am a Director with Alun Griffiths Contractors and currently responsible for major ECI Contracts. My previous experience in this field included leading the ECI for the A470 Cwmbach project.
I was responsible for developing new business in our Company, in particular gaining our position in the rail sector and the development of a rail division.
I started my career within the water industry but after graduating from UWIST I moved into highways. I worked for many years in the public sector and was Deputy Director for Cardiff before joining Griffiths 13 years ago.

Iain Mills, Senior Asset Manager, The Crown Estate

Iain is a Chartered Surveyor and a Senior Asset Manager in The Crown Estate's Rural and Coastal team. Iain's background is as a commercial investment surveyor and he was an Associate at Jones Lang Salle in their investment team for 15 years. He has now been at The Crown Estate for nearly 10 years, initially in the Marine team and latterly in the Rural and Coastal team.

Marine Energy & Infrastructure - synopsis:
The Crown Estate operates on the entire UK territorial sea bed and approximately 50% of the UK's tidal foreshore and estuaries, as well as having significant rural and urban assets. It holds the rights to the resources to develop renewable energy within the Renewable Energy Zone, which extends out to the continental shelf. The Crown Estate operates under statutory authority, The Crown Estate Act 1961, and it is tasked with managing its assets in light of the requirements of the Act which include the obligation to obtain best consideration for any disposition of its ownership, and its net revenue is returned to the UK Treasury. The Crown Estate has been involved in most energy proposals in the marine environment including wind, wave, tidal range and stream, CCS and gas storage, and also outfalls for nuclear and conventional energy generation, and marine source heat pumps.

Professor Roger A Falconer FREng FICE – Cardiff University

Roger Falconer is Professor of Water Management (Part-time), Founding Director of the Hydro-environmental Research Centre (1997-14) and Deputy Leader of the Energy and Environment Research Theme in the School of Engineering at Cardiff University. He also acts as an Independent Water Consultant. He was previously Professor of Water Engineering and Head of the Department of Civil Engineering at the University of Bradford. He manages a range of research contracts on hydro-

environmental modelling (including marine renewable energy) and has published over 450 papers and technical reports in the field. He is a Fellow of the Royal Academy of Engineering (RAEng), the Learned Society of Wales, the Institution of Civil Engineers and was President of the International Association for Hydro-Environment Engineering and Research (2011-15). He was a member of the Government's Expert Panel for the Severn Tidal Power Feasibility Project and a member of the Expert Panel and Regional Committee of Hafren Power. He regularly consults on a range of tidal energy projects.

Tidal Range Energy: Impoundment Studies for the Severn Estuary - synopsis
By Prof. Roger Falconer, Dr Athanasios Angeloudis and Dr. Reza Ahmadian, Hydro-environmental Research Centre (HRC), Cardiff School of Engineering, Cardiff University.

The presentation will review the background to the barrage and alternative tidal lagoon options considered within the Severn Estuary. Key hydro-environmental impact assessment studies undertaken by the HRC, at Cardiff University, as part of several funded research pro-jects will be summarised. In particular, emphasis will highlight new results focusing on model predictions of the far field effects of different barrage and impoundment configurations and recent field studies for the Severn Estuary. Emphasis will also demonstrate the potential benefits of two-way, vis-à-vis ebb tide only, generation and low head turbines. The results will show that two-way power generation offers the opportunity to provide almost as much power as ebb tide only generation, reduce the peak disturbance to the grid, minimise several of the hydro-environmental concerns and offer reduced flood risk upstream.

Current studies will also be presented, highlighting the estuary's response to the simultaneous operation of a barrage and lagoons. The impact of various impoundments on the maximum water levels and velocities has been considered in more detail, both within the Bristol Channel and the Severn Estuary. The results show that as additional schemes are developed within the Severn Estuary then the following impacts are predicted: (i) a peak increase in the maxi-mum water levels in the Channel, between the Irish Sea and the barrage site which is closely dependant on the operation scheme adopted for the barrage and impoundments; (ii) a reduction in the maximum water levels in the estuary upstream of the barrage and lagoon sites; and (iii) appreciable flood risk reduction for a range of river basins well upstream for a barrage, including the rivers Severn, Wye and Usk, based on a marked reduction in the maximum wa-ter levels of up to 2 m in the estuary.

Ioan Jenkins – Development Director Wales, Tidal Lagoon Power

A Welsh speaker with a background in the energy sector and strong track record for the delivery of sound financial and operational results across multi-site environments, Ioan's experience includes more than 12 years at Director/CEO level, managing contracts and generating sustained investment on behalf of organisations including Celtic Energy Limited, Business in the Community, Young Enterprise and BTCV (now trading as The Conservation Volunteers).
Ioan began his career with British Coal in South Wales prior to privatisation before then joining Celtic Energy Limited to lead the management of the Eastpit Opencast Site in Tairgwaith, East Merthyr Reclamation Scheme, Cwmbargoed Processing Plant and Llanilid Opencast Site near Bridgend. More recently, he held the role of Head of Community Regeneration with BITC, Chief Executive of Young Enterprise Wales and Director of BTCV Cymru.
Having joined Tidal Lagoon Power in May 2013 as Wales Development Director, Ioan is now responsible for the development of Tidal Lagoon Swansea Bay and Tidal Lagoon Colwyn Bay. He also works closely with

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Welsh industry and business by leading our commitment to developing a supply chain in Wales and has successfully championed the independent Wales Tidal Industry Advisory Group.

Tidal Lagoon Swansea Bay Project update - synopsis
At 320MW installed capacity, Swansea Bay Tidal Lagoon will be the largest marine energy development in the world. A £1billion infrastructure project developed by Tidal Lagoon Power Limited, it will have an entirely predictable 495GWh output each year of clean, green electricity and will power more than 155,000 homes for 120 years – that's about 11% of Wales' domestic electricity.
This presentation will provide an update on the Tidal Lagoon Swansea Bay project and Tidal Lagoon Power's ambition for the UK.

Martin Murphy MSc CEng, FIET, FIMarEST – Managing Director, Tidal Energy Ltd

Martin is a Chartered Engineer who graduated in electrical and electronic engineering and gained an MSc in power electronics engineering. He has spent the great majority of his career in the marine sector, firstly serving as a Marine Engineering Officer in the Royal Navy for 12 years and since then, 25 years in managerial positions in industry.

He became the Vice President for Marine and Offshore Systems in Alstom Power Conversion (APC) based in Paris in 2000, before being appointed as Managing Director for APC Ltd in Rugby, UK in 2003. In these roles he had management responsibility for businesses with 1000 employees and turnover in excess of £100M. He was heavily involved in projects such as the Queen Mary 2 cruise liner, and the Royal Navy's new class of Type 45 destroyer – where the company designed and supplied the ships' electrical propulsion systems.

In 2005, he joined the American corporation, L-3 Communications Inc., and was tasked to establish a discrete operational entity for the company in the UK. L-3 Communications Marine Systems UK Ltd was created and is now the focus of all L-3's marine businesses with its UK customers.

In February 2009, Martin was invited to join Tidal Energy Ltd, a company in a nascent industry seeking to realise the prospects for marine renewable energy. The company has successfully installed Wales' first full-scale tidal stream generating device known as DeltaStream™ in Ramsey Sound, Pembrokeshire.

Marine Renewable Energy – Continuing Progress in Tidal Stream Technology Development – synopsis
Much progress has been made by technology developers seeking to demonstrate the commercial viability of tidal stream energy converters. This presentation will firstly review the types of technology which are being tested by various manufacturers, and then by means of a specific case study of the author's own company, Tidal Energy Ltd, describe the challenges such developers face in seeking to establish marine energy as a worthy contributor to the wider renewable energy portfolio. TEL recently installed its commercial scale prototype in Ramsey Sound, Pembrokeshire and already much learning has been gained, not only in terms of the operational performance of the DeltaStream system, but also in analysis of its impact of the environment in a Marine Special Area of Conservation.

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Session 2: LOCAL ENERGY GENERATION

Session Chair: Gavin Miller, Policy Manager, Strategy - Engineering Policy ICE

Keith Jones, Environmental Advisor, National Trust

Keith has spent 16 years with the National Trust starting as the countryside Warden for Snowdon and moving on to be the countryside manager for Snowdonia and Llyn, the last 9 years as a Senior Environmental Advisor. Keith is also the lead for renewable energy generation for the National Trust within its £35m renewable energy investment program.

Prior to this and following his first class degree in Environmental Planning he was the National Trust Head Warden and then Countryside Manager for Snowdonia which included managing the 4000acre Snowdon farm. At this time he was also one of the founders of the Welsh Institute of Countryside and Conservation Management.

He currently specialises in hydro development having been involved in 6 completed hydro systems to date and leading on the development of a further 22. He regularly advises organisations and governments on aspects of distributed generation. He is a steering group member of the Community Energy Wales Developments Fund and sat on the climate change commission Wales land use group. As a previous winner of the Ashden Gold award he and a colleague founded the UK wide 'fit for the future' network which brings many of the largest NGO's and landowners together to learn and share about sustainable energy.

He actively works within the community sector: Director of the Anafon Community Hydro and Ynni Padarn Peris and Ogwen Hydro as well as helping many other community energy companies. He was selected as the Institute of Welsh Affairs environmentalist of the year 2014 and was awarded the honorary title of Lecturer by the University of Bangor 2015 and was shortlisted as a community energy champion by Community Energy England.

A freelance lecturer on sustainability for the Bangor university, Cardiff School of Architecture and New York Universities Keith represented the 67 National Trusts globally at the Paris Climate change talks. He actively blogs and shares freely as well as being one of the Environmental experts for the last 16 years on the BBC radio Cymru Galwad Cynnar as well as a regular commentator on energy maters for the BBC in Wales

Distributed energy: A moving feast - synopsis
The last 10 years in the National Trust has been a steep learning curve in terms of energy management with a particular focus on distributed energy generation. The national trust is the guardian of some of the world oldest electricity generating technology such as the 1863 Cragside hydro system. The organisation has set itself an ambitious target of reducing its energy use by 20% and generating 50% of the remaining need from renewable sources on its estate. The National Trust in Wales where many of the approaches of the organisation are developed and tested have reduced their energy use by almost 40% and are now generating 63% of their energy use from the estate. This has been achieved through a combination of

traditional hydro, biomass and heat pump but also developing approaches to open sea heat pump at Plas Newydd. The work continues to develop and NT wales are on target to exceed 100% generation from their estate in the coming 24 months.

Generation is one side of the coin. Management, usage and trading are other facets. The future of generation seems to be better use on site and aspects such as load shifting and storage which are early in their development at a micro level but the NT is involved in the trading aspect specifically peer to peer supply and this summer will see the use of aggregated supply at a community level to add value to the energy and to reduce costs. The near future is uncertain but there are more are plenty of opportunities

Alistair Hinton, Senior Construction Manager – Vattenfall UK

Alistair graduated from the University of Newcastle Upon Tyne with a degree in Marine Technology. Alistair has always worked in civil engineering and project management, taking on his first role from 1995 to 2003, where he worked as a project manager in the telecoms industry. From here Alistair moved into the renewables industry, joining Natural Power's wind energy team. In 2008 he joined Nuon Renewables (now Vattenfall) where he currently works.
Since starting his career in the wind industry Alistair has always worked on projects based in Wales. In 2010 he took on a role within Vattenfall's flagship Pen y Cymoedd Wind Energy Project, taking the project through the two year long civil construction phase.
Alistair held a place on the editorial panel of the Institution of Civil Engineers Energy Journal from 2010 to 2013.

Local Energy Generation. Big business working with Local Communities - synopsis
The Pen y Cymoedd Wind Energy Project is a 76 turbine, 228MW development located between Aberdare and Neath on the Rhigos Mountain. Construction commenced in 2012 with first generation due in August 2016.
A key feedback from the extensive public engagement was the need to provide opportunities for local employment and suppliers. This required support not only from Vattenfall as the developers, but also the Local Authorities and Welsh Government to maximise the potential from the area.
The presentation will illustrate the process from initial engagement through Procurement, the outcome and the lessons learned from the process.

Johnny Gowdy, Commercial Director - RegenSW

Johnny is a director of Regen SW and leads the development of our commercial projects. He is an industry-recognised expert in the south west offshore renewable supply-chain.
Johnny was pivotal in the setting up of the UK's first Marine Energy Park, chairs the Bristol Tidal Energy Forum and is a member of the governments Marine Energy Programme Board. He also co-authored the influential Bristol Channel Balanced Technology Approach paper and was invited to speak to the Climate Change Select Committee on the Severn barrage proposal.

He comes from a background in management consultancy, having been a partner with the global consultancy firm Accenture working within their energy practice.

Energy Generation in the Region – A REGEN SW Perspective – synopsis
Johnny's presentation will cover the following:

- The future outlook for renewables in light of recent policy changes and energy policy reset
- Slightly bigger picture look to 2030 given decarbonisation commitments, COP and UK energy challenges – cost and security
- Opportunity and challenges for decentralised generation – based on some work we are doing for WPD
- New business models emerging – including use of energy storage and "smart" energy schemes
- Role for regional energy policy and actions – devolution, communities and local energy supply
- Will touch on Bristol Channel as a potential energy "hub" system and collaboration

Dr Mike Pedley, Head of Energy, Dŵr Cymru Welsh Water

As Head of Energy, Mike leads a team covering all aspects of Welsh Water's energy strategy including energy purchasing, optimisation, generation and carbon reporting. Welsh Water are a not-for-profit water utility supplying most of Wales and Herefordshire and are one of Wales' largest energy users with around 4100 sites. They are also a growing energy generator. In 2014 Mike led Welsh Water's acquisition of hydro assets from Infinis Hydro and these are now incorporated into the company's expanding generation portfolio located on their sites across Wales. Welsh Water's renewable generation has grown from 2% of consumption in 2010 to over 20% in 2015/16 sourced from a mix of hydro, anaerobic digestion and solar PV. The investment into local renewable energy continues and the company is now looking to combine all these and more in their innovative Waste Water Energy Park near Wrexham.
Mike's background includes commercial, technical and environmental experience, much of it in the Water Industry with Yorkshire Water, Kelda and now Welsh Water. He lives in the Yorkshire Pennines in a valley of long-gone water powered woollen mills, works in Wales and when not driving between the two is a keen orienteer and fell runner.

Five Fords Waste Water Energy Park: Combining embedded generation projects to maximise benefits. - synopsis
Dwr Cymru Welsh Water have transformed their largest wastewater treatment works in North Wales into an innovative and unique energy park that includes the first operational biomethane injection ("Gas-to-Grid") site in Wales. The project aims to maximise the potential of the site and demonstrates by how multiple renewable energy technologies can be used together to maximise benefits for the business and its customers.
Five Fords treats wastewater from nearly 100,000 homes and businesses in the Wrexham area as well as sewage sludge from other sites. In 2013 Welsh Water invested in anaerobic digestion and has developed from there to add combined heat and power, gas to grid and a 10,000 panel solar array. The electricity (and heat) generated are used on site whilst gas, and any surplus electricity, exported to the local grids.
This paper sets the development into the context of Welsh water's energy strategy. It looks at what has been achieved to date; how using multiple technologies together can deliver more benefit than those projects in isolation; and looks ahead to further developments in the pipeline. By 2018 it is hoped to feature thermal hydrolysis (to enhance the anaerobic digestion), wind and hydro generation. Challenges and risks are also

considered including the impact of government policy and the effect of a constrained electricity distribution network.

Session 3: ENERGY STORAGE & DISTRIBUTION

Session Chair: Stephen Lawrence CEng CEnv MICE MCIWEM CWEM

Steve is a Chartered Engineer and Environmentalist, as a Member of both the ICE and CIWEM. He is a Development Director for consultants Mott MacDonald and is also the Past Chairman of the Association of Consultant Engineers Wales/Cymru. With Mott MacDonald Steve assisted in the role of Owner's Engineer for Severn Power on the Uskmouth CCGT project managing planning applications and environmental documentation. Previously Steve acted as a consultant for the remediation of Hams Hall and Carmarthen Bay power station sites. Steve has also been involved in the supervision of several wind farm projects.

Douglas Ramsay, Electrical Engineer / Mott MacDonald

Douglas Ramsay is a senior electrical engineer with Mott MacDonald.

He has experience with renewable generation connection work, HVDC design, distribution network design and planning. Douglas has a long standing interest in grid scale battery energy storage.

Battery Storage – Why, What, Where and How? - synopsis:

This talk will seek to answer the following questions:

- Why battery storage - what has changed to make battery storage viable and what can battery storage do for the UK network?
- What battery storage technologies are available and suitable for grid scale storage?
- Where can battery storage be connected and what are the pros and cons of the different connection points?
- How can Battery storage be used? This will include discussion of different battery storage operation strategies

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Jeremy Smith, Head of Development Strategy, RWE Innogy UK

Jeremy Smith is currently the Head of Development Strategy for RWE Innogy UK with a remit across the UK and has worked in renewables – principally onshore wind - since 2009 with previous experience in conventional power generation, minerals planning, environmental regulation and waste management.

Prior to this role he was for several years the Welsh Development Manager responsible for all onshore wind development in Wales and has worked on developing several onshore wind projects in the 50-150MW range.

He is currently the Chair of the Strategy Group of Renewable UK Cymru playing a full and active role in Welsh renewables and addressing many of the issues affecting developers in Wales. He is also the Chair of a Task and Finish Group, sponsored by Edwina Hart the Welsh Minister for Economy, Science and Transport , looking into Rural Economic Development particularly in relationship to renewable energy technologies and grid in rural areas.

Low Cost, Low Carbon and Little Grid – future challenges & opportunities for renewable energy in Wales – synopsis
The presentation will cover the tensions, actions that can be taken, opportunities and (perhaps) evolutionary direction of Welsh renewables given the political reality of decarbonisation at least cost, and given grid constraints due to recent low-carbon deployment.

Steven Gough MEng (Hons) MIET - Innovation and Low Carbon Network Engineer
Western Power Distribution

Steven has been closely involved with Western Power Distribution from his first year at Southampton University as a sponsored student through the then new Power Academy. Steven spent his next two summers doing placements in various departments throughout the business.

Once he graduated, and completed a two month international placement in Turkey, he started Western Power's Graduate Training scheme. During his graduate training he expanded on his distribution knowledge by spending throughout the business. Steven then started a Development Role as a Design Engineer in Primary System Design but soon moved into an Asset Management Engineer role in the same department to manage the network model.
Steven's most recent position is in the Future Networks Team as an Innovation and Low Carbon Network Engineer. In this role he manages NIA projects which include projects focusing on integration of Distributed Generation onto the network and has instigating business change by rolling out Alternative Connections and is leading on the largest Active Network Management area to date. He has been involved in projects spanning from community demand side response through to reactive power support on rural networks and is investigating battery storage for renewable generation.

Integrating Renewables – quicker and more efficient connections - synopsis
Steven will discuss the level of generation on the distribution system and the innovative solutions Wester Power Distribution have used to help.

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Session 4: NUCLEAR ENERGY

Session Chair: Sarah Jones – BEng, MICE, CEng. Junior Vice-Chair 2015-2016, ICE Wales Cymru.

Sarah is a Chartered Civil Engineer with 28 years' experience in the nuclear industry, conventional power projects and major sites infrastructure.

She has worked for a variety of stakeholders in the UK nuclear industry including:

- New build - Horizon Nuclear Power, as lead Civil Engineer.
- Nuclear Site Licensees British Nuclear Fuels and Magnox Electric Ltd (via Ove Arup & Partners).
- UK regulators, the Office for Nuclear Regulation where she was HM Inspector for Civil Engineering. She worked on Generic Design Assessment of the AP1000 and EPR nuclear power stations, as well as regulation of existing sites.

She is an active champion of the STEM agenda, helping to highlighting potential career paths for young people in engineering and the nuclear industry. She is also a champion of diversity in engineering to plug the skills shortage in our industry.

Ed Hazell, Civil Engineer for Horizon Nuclear Power

Ed is a Civil Engineer at Horizon Nuclear Power, where he is excited to be part of developing the UK's new nuclear fleet to deliver low carbon electricity. His work focuses on reviewing design of safety-classified structures for the Wylfa Newydd project and supporting the work to assess external hazards, which encompasses meteorological, hydrological, geotechnical, man-made and biological effects for consideration in the design.

He grew up in Greater Manchester and obtained his MEng degree in Engineering Science at Oxford, where he was subsequently awarded a doctorate for his thesis in geotechnical engineering.
After leaving university, he worked in consultancy on a broad range of projects in the process, oil & gas, water, energy, nuclear and defence sectors, at sites from Saudi Arabia to Berkshire. Most recently he spent two years as lead civil/structural engineer carrying out remedial works to a nuclear structure, involving design of new reinforced concrete sections to be cast around heavily-corroded steel columns as well as supervising intrusive inspection and repair works on a nuclear licensed site. He moved to Wales in 2014 and lives in Cardiff with his Welsh-speaking wife and two young children.

Developing the Wylfa Newydd Project – synopsis
Horizon Nuclear Power is a UK energy company developing a new generation of nuclear power stations. A wholly owned subsidiary of Hitachi,Ltd. it intends to create at least 5,400MW of new nuclear power starting with the Wylfa Newydd site on the Isle of Anglesey. Ed will provide an overview of the company, describing the complexity and civil engineering challenges ahead in the building of new nuclear power using the Hitachi-GE reactor technology, the UK Advanced Boiling Water Reactor (ABWR).

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Andria Gilmour B.Eng. C.Eng. MICE. FIStructE. - Office for Nuclear Regulation – Safety Inspector, Civil Engineering.

A Chartered Civil and Structural Engineer with 23 years post chartership experience of civil and structural engineering, Andria has considerable experience of projects for the power sector, having worked on both new build and life extension projects. She transferred from consultancy to a regulatory role 3 years ago, though remains involved with civil engineering projects on a day to day basis. Her first experience within the nuclear sector was on the UK's last new nuclear power station Sizewell B, and went on to design safety improvements for both the Magnox and Advanced Gas Cooled Reactor Fleets. She also led civil engineering design work on major Energy from Waste plants. Andria now has responsibility for regulating the safe operation of many ageing nuclear facilities.

Nuclear Regulation - synopsis
The presentation will briefly outline the following topics:

- Introduction to ONR and the role of the regulator;
- The fundamental importance of civil engineering structures in the nuclear industry;
- The process of Regulation for the new build power generation facilities.

It will briefly introduce the responsibilities of the Regulator, the sites we regulate and the principles of Regulation. The process by which new facilities are being Regulated will also be outlined.

Richard Edwards, Head of Supply Chain QA – Horizon Nuclear Power

Richard has worked in the electrical supply industry for more than 40 years. His career started at Hinkley Point A & B Power Stations where he was trained and worked in Instrumentation & Controls. Moving to regional Head Quarters in Bristol, he build remote inspection equipment for reactor plant and developed qualifications in Non-Destructive Testing. Following privatisation of the Electricity Supply Industry, based at Swindon initially with National Power, he worked on conventional and renewables, operational and new build plant in the areas of inspection and quality.
He set up and managed the Engineering Quality team for RWE npower and manged a quality team in Essen for RWE Technology, before joining Horizon in February 2011. He became Head of Supply Chain QA in January 2014 since when he has built a new team of supply chain quality specialists.

Building Awareness of Horizon's Values, Standards and Supply Chain Requirements - synopsis
Richard will share Horizon's graded approach for the Supply Chain that is critical to the successful and safe delivery of the Wyfla Newydd Project. He will reflect on the perception of what "nuclear standards" are for the supply chain.

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EXPERT PANEL DISCUSSION

Session Chair: Rudi Plaut CBE CEng FIMechE

Rudi Plaut obtained a University of London degree in civil engineering before gaining an Engineering Watch Keeping Certificate in the Royal Navy. He then came to Wales as a departmental Assistant Manager in the Port Talbot steel works before leaving to start his own company.

Today his company annually sells its specialist hotel products to customers in over 100 countries, based upon its development of important features for the convenience and safety of guests.

Over the years Rudi Plaut's other activities have included becoming the first Chair of Governors of the University of Glamorgan, and of the Qualifications, Assessment and Curriculum Council for Wales. He was the Founding Chair of Techniquest, Britain's oldest Hands-On Science Discovery Centre. He has also been active in other voluntary roles, including in the Confederation of British Industry.

Martin Harper - RSPB Conservation Director

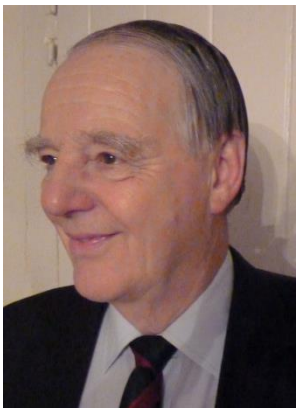
Martin Harper has been the RSPB Conservation Director since May 2011 and leads the charity's strategy on conservation research, land management, advice and advocacy. Prior to joining the RSPB in 2004, Martin spent five years as Conservation Director at Plantlife International, having previously run Wildlife & Countryside Link. Educated at Oxford and University College London, Martin undertook fieldwork in the Comores and Mongolia. He is a member of Defra's Biodiversity Programme Board and the Board of The Climate Coalition. Away from work, Martin enjoys family life in Cambridge and the North East coast with his wife and two children. Running keeps him sane, while Arsenal FC and the England cricket team provide him with emotional highs and lows.

Professor Andrew R Barron, Ser Cymru Chair and Director ESRI, Swansea University

After having gained his BSc and PhD degrees from Imperial College (London) and performing post-doctoral research at the University of Texas at Austin, Barron spent eight years as a Professor of Chemistry at Harvard University before moving to Rice University in 1995 where he is the Welch Chair of Chemistry and Professor of Nanoengineering and Materials Science. In 2014 he was appointed the Ser Cymru Chair of Low Carbon Energy and Environment at Swansea University. He is the author of over 440 publications, 20 Patents, and 5 books. His early research focused on the chemistry of aluminum and related elements and spanned catalysis, electronic materials and nanotechnology. His current research involves the application of chemistry, nanotechnology and materials science to fundamental problems in energy and the environment. Prof. Barron is a Fellow of the Royal Society of Chemistry, and the recipient of several awards, including: Hümboldt Senior Scientist Research Award, the Corday Morgan Medal, the Meldola Medal, the Welch Foundation Norman Hackerman Award, the Lifetime Achievement Award in Nanotechnology and the World

Technology Award. In 2009 Barron was appointed as the Prince of Wales Visiting Innovator. Barron is the co-founder of several companies over a diverse range of industries. He has just founded a program for water purification in developing regions of the world. For relaxation Barron races cars on both sides of the Atlantic.

Professor Chris Binnie, FICE, FREng



Professor Chris Binnie is an independent consultant specialising in dams, tidal power, water resources, water supply and flooding. He graduated from Cambridge with a first in engineering and then in law. His post grad was at Imperial College where he studied dams and hydro power.
He has been an international water engineer having worked in more than a dozen countries. For about 15 years he was Director for water at Atkins and then Deputy Chairman of Binnie Black & Veatch. He was a Panel Engineer under the Reservoirs Act for about 30 years. His designs included the 70m high Marchlyn dam of the 1,500MW Dinorwic pumped storage scheme in North Wales.
He was President of the Chartered Institution of Water & Environmental Management. He was on the Management Board of the Severn Tidal Power Group in the 1980s for their studies. For DECC he was the chairman of the Independent Engineering and Technical Expert Panel for the Severn tidal power studies and on the design advisory panel for the Mersey Tidal Barrage. He has given expert witness evidence on many occasions as well as evidence to Parliamentary Select Committees. He has been a member of the CIWEM Water Resources Expert Panel and the ICE Water Board for about the last 20 years.
Chris is a Visiting professor at Exeter University

Gavin Miller, Policy Manager, Strategy - Engineering Policy ICE

Gavin Miller is Energy Policy Manager with ICE. With a PhD in political science he has an extensive academic background in government policy and the environment. Previous experience includes working in the European Parliament on renewables policy and in the UK on planning applications for energy developments. At ICE Gavin has focussed on developing policies around the energy trilemma: decarbonisation, security of supply and cost.

Simon Power BSC(Hons) PgD CEnv MRTPI MCIWEM, Director – Arup

Simon leads Arup's consulting business in South West England, Wales and Northern Ireland, with a team of more than 100 technical experts who include town and transport planners, urban designers and economists, landscape architects, ecologists, sustainability and carbon advisors, management consultants, programme and project managers, and engineers.

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Simon's professional background is in energy, water and transport. He is a chartered town planner and environmental scientist with a focus on sustainability and good design. He is increasingly involved in developing propositions for cities, place making, digital and energy services, and has an excellent team that can deliver and influence in these areas. One area of personal interest to Simon is how the growing resilience agenda can form a wider narrative to the deployment of these skills.