

# COASTS, MARINE STRUCTURES AND BREAKWATERS 2017

The leading international conference highlighting global marine engineering advances

5 - 7 September 2017, Liverpool



# DEFINING INDUSTRY STANDARD PRACTICE FOR 30 YEARS

Since 1982, ICE Breakwaters authors, delegates and outputs have shaped the marine engineering sector.

Unveiling innovative technologies, assessing techniques, making formal recommendations and providing in-depth technical analyses. Conference outcomes have translated into guidance documents and manuals that have defined industry standard practice for 30 years.

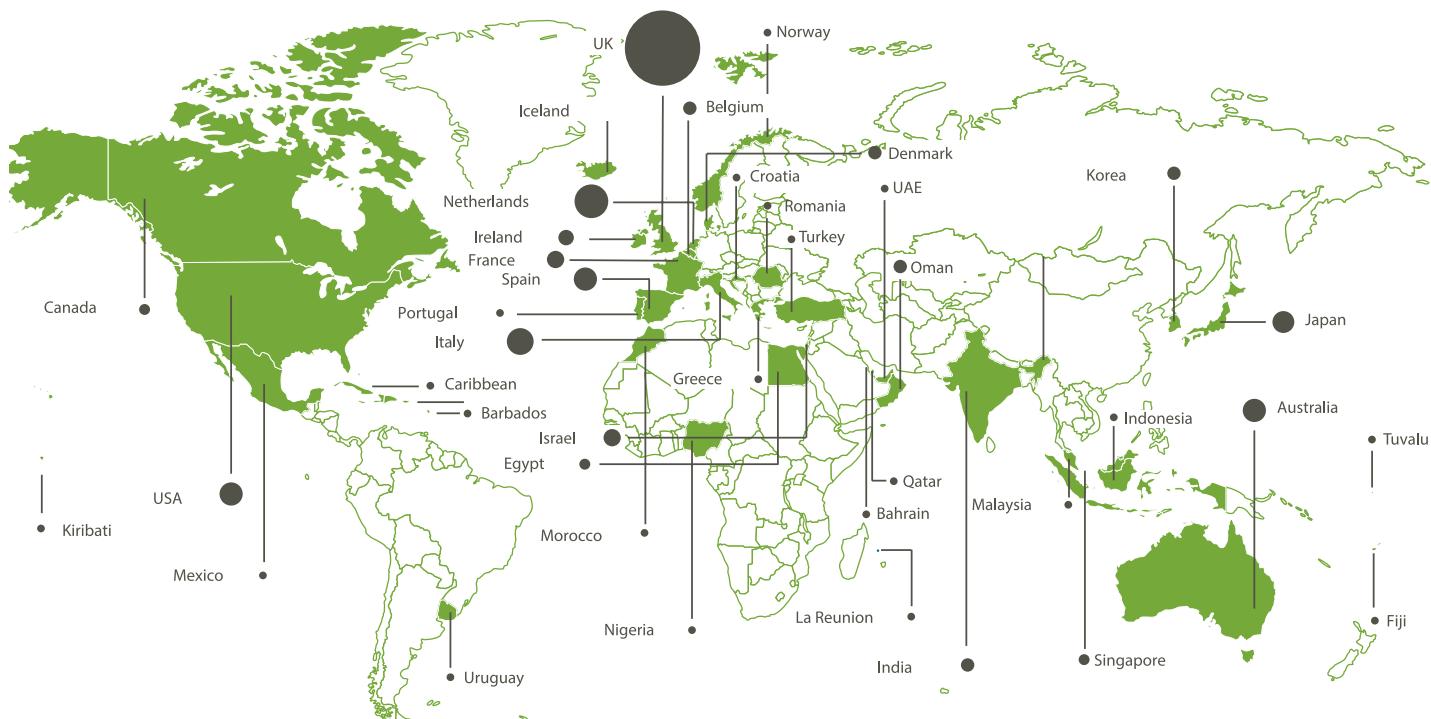
Over 100 papers will be presented at the 2017 event in the historic maritime city of Liverpool. With more than 500 speakers and delegates from around the world, this quadrennial event is unmissable for the marine engineering community.



## WHAT MAKES IT UNIQUE

- ICE's **rigorous** peer-review process features only the most valuable and relevant information, both strategic and technical
- **Targeting** only the most forward-thinking industry papers, selected by a highly experienced organising committee
- **Bringing** together industry representatives from UK and abroad, with the highest degree of participation from clients, contractors and consultants, complemented with breakthrough researchers from top universities and specialist facilities
- **Shaping** the marine engineering sector, with innovative technologies and new methodologies
- **Addressing** climate change adaptation, from research to design and construction, heavily influencing how schemes are planned, tested and developed
- **Focussing** on marine renewables, bringing together developers and engineers who must design, construct and maintain the infrastructure

## Papers presented from around the world...



## The 11th conference in the series

**34 years**  
and counting..



**500 +**  
delegates



**3 Days**  
of multi-stream  
conference sessions

 **100 +**  
Papers to be  
presented



**60**  
Exhibitors



**30 +**  
Innovation Spotlight  
presentations

 **12** Hours of  
networking



Rigorous peer  
review



Site visit boat trip



**1** Day workshop on  
wave overtopping



**1** Unforgettable gala  
dinner

# WHO ATTENDS

The long history of the Breakwaters series has given it time to develop and evolve into a mainstay of the international scientific and engineering community calendars. Over the years the series has engaged with partner Institutions from around the world, and 2017 is shaping up to have unprecedented global reach.

## Clients



## Contractors



## Consultants



## Supply Chain



## Academia



Register now - [ice-breakwaters.com](http://ice-breakwaters.com)

# ICE Coasts, Marine Structures and Breakwaters 2017

## PROGRAMME

### 04 September 2017

11:00

⌚ 11:00 - 17:00

**Short course on wave overtopping – improvements in prediction methods**

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18:30

⌚ 18:30 - 20:00

**Welcome drinks reception for all delegates**

Merseyside Maritime Museum

## PROGRAMME

### 5 September

08:15

⌚ 08:15 - 09:00

**Exhibition open; refreshments available**

Hall 2B

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09:00

⌚ 09:00 - 10:30

Stream 1

**Harbour development**

Auditorium 1A

09:05 - 09:25 The development of Aberdeen Harbour expansion project

Ian Cruickshank - *HR Wallingford, United Kingdom*

09:25 - 09:45 Design of a new fishery harbour in Masirah Island, Oman

Leopoldo Franco - *University Roma Tre, Dept. Civil Engineering, Italy*

09:45 - 10:05 Investigation and simulation of failure mechanism of a port basin revetment, generation of remediation design and re-construction works

Steven te Slag - *CDR International BV*

# ICE Coasts, Marine Structures and Breakwaters 2017



⌚ 09:00 - 10:30

Stream 2

## Innovation Spotlight (C)

Auditorium 1B

- 09:05 - 09:10 The Atlantic Marine Energy Test Site - Designing for emerging technologies  
Stephen Fraser - *Arup, Ireland*
- 09:10 - 09:15 Using remote inspection tools in the coastal and marine environment  
Ian Mockett - *COWI*
- 09:15 - 09:20 Structure-from-Motion (SfM) monitoring of nourished gravel beaches in Croatia  
Suzana Ilic - *Lancaster Environment Centre, Lancaster University*
- 09:20 - 09:25 On the application of mega-nourishments in the UK  
Antonios Valsamidis - *Swansea University, United Kingdom*
- 09:25 - 09:30 The floating piers  
Ashit Jadav - *Arup, United Kingdom*
- 09:35 - 09:40 Dune and residential buildings protection using geotextile tubes, Atlantic Ocean Portugal  
Mink ter Harmsel - *TenCate Geosynthetics Netherlands BV, Netherlands*
- 09:40 - 09:45 A potential additional barrier for flood protection?  
Charles Brindley - *none, United Kingdom*
- 09:45 - 09:50 Use of an advanced workshop on 'Port Engineering and Maritime Works' in teaching future engineers  
Guillaume Carpentier - *ESITC Caen, France*

⌚ 09:00 - 10:30

Stream 3

## Wave design conditions

Auditorium 1C

- 09:05 - 09:25 The conversion of spectral wave heights to design wave heights  
Markus Muttray - *BAM Infraconsult, Netherlands*
- 09:25 - 09:45 Wave Spectra revisited – New guidelines based on observations  
Lluis Via-Estrem - *Imperial College, United Kingdom*
- 09:45 - 10:05 Effects of storm duration and sequencing on armour layer damages  
Andrea Marzeddu - *Politecnical university of Catalonia, Spain*

10:30

⌚ 10:30 - 11:00

Break

## Refreshments, exhibition, and networking

Hall 2B

11:00

⌚ 11:00 - 12:45

Stream 1

## Construction at the coast

Auditorium 1A

- 11:05 - 11:25 Working within a sensitive, flood vulnerable environment – Landing the power cable for the Race Bank Offshore Wind Farm  
Matt Wearmouth - *Mott MacDonald Limited, United Kingdom*
- 11:25 - 11:45 Practical use of technology in delivering the UK's largest coastal defence scheme on the Fylde Coast, Lancashire  
Carl Green - *Wyre Borough Council, United Kingdom*
- 11:45 - 12:05 Innovative construction of the Sandsend Road coastal protection scheme using the 'MULE'  
Graham Dewe - *Balfour Beatty, United Kingdom*
- 12:05 - 12:25 Hopton coastal defences - failure to replacement in 24 months  
Alastair Tindle - *rosebay services, United Kingdom*

⌚ 11:00 - 12:45

Stream 2

## Ecological aspects of design

Auditorium 1B

- 11:05 - 11:25 Developing a business case for greening of hard coastal and estuarine infrastructure: preliminary results from the IGGI Frame project.  
Larissa Naylor - *University of Glasgow, United Kingdom*
- 11:25 - 11:45 Assessing the performance of natural and nature based defences  
Nigel Pontee - *CH2M, United Kingdom*
- 11:45 - 12:05 Challenges in applying ecological enhancement factors into coastal and marine concrete construction  
Andrew Rella - *ECONcrete Inc., United States*
- 12:05 - 12:25 Multi-purpose breakwaters  
Jena Gilman - *COWI*

# ICE Coasts, Marine Structures and Breakwaters 2017



⌚ 11:00 - 12:45

Stream 3

## Tsunami impact

Auditorium 1C

11:05 - 11:25 Numerical analysis on hydraulic characteristics of tsunami overtopping caisson breakwaters

Jun Mitsui - *Fudo Tetra Corporation, Japan*

11:25 - 11:45 Clarifying the stability of armour blocks behind the caisson against tsunami after abrupt change of breakwater width

Kojiro Suzuki - *Port and Airport Research Institute, Japan*

11:45 - 12:05 Experimental study on breakwater against overflow and big waves

Tsukasa Kita - *Port and Airport Research Institute, Japan*

12:05 - 12:25 Tsunami inundation forces on coastal buildings – effects of building layout

Ian Chandler - *HR Wallingford, United Kingdom*

12:45

⌚ 12:45 - 13:45

Break

## Lunch, exhibition, and networking

Hall 2B

13:45

⌚ 13:45 - 15:15

Stream 1

## Multi-purpose design

Auditorium 1A

13:50 - 14:10 Architecture and wave defence, the Louvre Abu Dhabi

Matthew Vaughan-Shaw - *Buro Happold Ltd, United Kingdom*

14:10 - 14:30 Crown walls in mass and reinforced concrete. The way to aesthetics in maritime works.

Vicente Negro - *Universidad Politécnica de Madrid, Spain*

14:30 - 14:50 Planning and design of Swansea Bay tidal lagoon

Iain Roberts - *Atkins, United Kingdom*

⌚ 13:45 - 15:15

Stream 2

## Asset risk and reliability

Auditorium 1B

13:50 - 14:10 Using Reliability metrics to evaluate vulnerability of a coastal dike subjected to climate change

Hans Moritz - *U.S Army Corps of Engineers, United States*

14:10 - 14:30 Improving the representation of the fragility of coastal structures: Brunel seawall (Dawlish, UK)

Robert Jane - *University of Plymouth, United Kingdom*

14:30 - 14:50 Uncertainty in coastal structure reliability

Jeffrey Melby - *USACE Engineer R&D Center, United States*

⌚ 13:45 - 15:15

Stream 3

## Waves on structures

Auditorium 1C

13:50 - 14:10 Caisson design for high storm conditions

Martin Young - *HR Wallingford*

14:10 - 14:30 Investigation of the performance of a multi-functional harbour structure

Sara Mizar Formentin - *Unibo*

14:30 - 14:50 Hydraulic loads on large gates

Hessel Voortman - *Arcadis Nederland B.V., Netherlands*

# ICE Coasts, Marine Structures and Breakwaters 2017



15:15

⌚ 15:15 - 15:45

Break

## Refreshments, exhibition, and networking

Hall 2B

15:45

⌚ 15:45 - 17:30

Plenary

## Closing Plenary

Auditorium 1A

15:50 - 16:10 A standard approach to coastal structures?

Simon Burchett - *WSP Group, United Kingdom*

16:10 - 16:30 Stabilisation to railway coastal defences at Shakespeare Beach – Dec 2015 to autumn 2016

John Vincett - *Tony Gee and Partners LLP, United Kingdom*

16:30 - 16:50 Case Study: Design and construction of a breakwater in a remote location in Western Australia

Hubert VANDER MEULEN - *BESIX - Engineering Department, Belgium*

# PROGRAMME

## 6 September

08:15

⌚ 08:15 - 09:00

## Exhibition open; refreshments available

Hall 2B

09:00

⌚ 09:00 - 10:30

Stream 1

## Working in the marine environment

Auditorium 1A

09:05 - 09:25 Risky Business: Dealing with unexploded ordnance (UXO) in the marine environment

Nick Cooper - *Royal HaskoningDHV, United Kingdom*

09:25 - 09:45 Recent approaches to the solidification and stabilisation (S/S) of contaminated dredge material in Ireland

Michael O'Shea - *Malachy Walsh & Partners, Ireland*

09:45 - 10:05 Rock structures – Has advances in technology made them any better?

Mark Glennerster - *Glennerster Consulting, United Kingdom*

⌚ 09:00 - 10:30

Stream 2

## Joint design conditions

Auditorium 1B

09:05 - 09:25 Assessing the joint probability of sea conditions: A robust approach

Dominic Hames - *HR Wallingford*

09:25 - 09:45 An event-based approach for extreme joint probabilities of waves and sea levels

Franck Mazas - *ARTELIA, France*

09:45 - 10:05 An approach to evaluating coastal total water levels over varied temporal and spatial scales for future design and vulnerability assessment

Heidi Moritz - *US Army Corps of Engineers, United States*

# ICE Coasts, Marine Structures and Breakwaters 2017



⌚ 09:00 - 10:30

Stream 3

## Applying CFD

Auditorium 1C

09:25 - 09:45 Numerical modelling of caisson breakwaters under sliding and overturning motion using the Proteus toolkit  
*Angelos (Aggelos) Dimakopoulos - HR Wallingford, United Kingdom*

09:45 - 10:05 Numerical modelling of wave downfall pressures landward of a seawall  
*Annelie Baines - University of Manchester, United Kingdom*

10:30

⌚ 10:30 - 11:00

Break

## Refreshments, exhibition, and networking

Hall 2B

11:00

⌚ 11:00 - 12:45

Stream 1

## Challenges at the coast

Auditorium 1A

11:05 - 11:25 Impacts of climate change on asset deterioration  
*Andy Tan - Environment Agency*

11:25 - 11:45 Coastal road asset management: Dealing with uncertainty using quantitative erosion monitoring and modelling  
*Michael Lim - Northumbria University, United Kingdom*

11:45 - 12:05 Maximising the standard of protection of a rock revetment in Lahinch for a predefined capital budget  
*Alexander Dane - Jeremy Benn Associates, United Kingdom* 12:05 - 12:25 The coastal challenges of adaptation for sea level rise in Kiribati  
*Christopher Brown - Deborah McLaren Consulting Ltd, United Kingdom*

12:05

⌚ 11:00 - 12:45

Stream 2

## Heritage structures

Auditorium 1B

11:05 - 11:25 Orphan breakwaters – what protection is given when they collapse?  
*William Allsop - HR Wallingford, United Kingdom*

11:25 - 11:45 Exploring structural stability of old blockwork breakwaters  
*Adrian Pearson - Moffatt & Nichol, United States*

11:45 - 12:05 Wave impacts on the Eddystone lighthouse: a field and laboratory investigation  
*Davide Banfi - Plymouth University, United Kingdom*

12:05 - 12:25 Overcoming the challenges of refurbishing a Victorian coastal defence - A case study from Cromer coastal protection scheme  
*Clifford Phang - AECOM, United Kingdom*

12:25

⌚ 11:00 - 12:45

Stream 3

## Advancement in filters/underlayers

Auditorium 1C

11:05 - 11:25 New design guidance for underlayers and filter layers for rock armour under wave attack  
*Jentsje van der Meer - Van der Meer Consulting bv, Netherlands*

11:25 - 11:45 Modelling of open filters under wave loading  
*Marcel van Gent - Deltares, Netherlands*

11:45 - 12:05 Transport of rock on a dynamic slope under oblique wave attack  
*Gregory Smith - Van Oord Dredging and Marine Contractors, Netherlands*

12:05 - 12:25 Stability of very wide graded material, designed as breakwater core, under wave attack  
*Ton van der Plas - Bontrup, Netherlands*

12:25

⌚ 12:45 - 13:45

Break

## Lunch, exhibition, and networking

Hall 2B

# ICE Coasts, Marine Structures and Breakwaters 2017



13:45

⌚ 13:45 - 15:15

Plenary

## Innovation Spotlight (B)

Auditorium 1A

- 13:50 - 13:55 Sandscaping: making innovative coastal management work in the UK  
*Victoria Clipsham - Royal HaskoningDHV, United Kingdom*
- 13:55 - 14:00 A novel technique for nearshore morphological monitoring using marine radar: initial deployment and preliminary survey results  
*Cai Bird - Marlan Maritime Technologies, United Kingdom*
- 14:00 - 14:05 Innovative use of drone technology, with high resolution digital photogrammetry & 3D numerical modelling for coastal cliff stability evaluation  
*Trevor Carter - Golder Associates, Canada*
- 14:05 - 14:10 The use of sand encapsulated elements for beach protection.  
*Edwin Zengerink - TenCate Geosynthetics, Netherlands*
- 14:10 - 14:15 Design for accessibility for floating structures  
*Matthew East - GHD, United Kingdom*
- 14:15 - 14:20 Ecological enhancement of coastal Infrastructure  
*Mairi Mac Arthur - University of Glasgow, United Kingdom*
- 14:20 - 14:25 Marine construction in concrete  
*Martin Hawkswood - Proserve Ltd, United Kingdom*
- 14:25 - 14:30 A physics-based rubble mound stability simulator for armour layers  
*John-Paul Latham - Imperial College London, United Kingdom*
- 14:30 - 14:35 Measurement of layer thickness, as-built bulk density and void porosity in antifer cube armour breakwaters  
*Atilla Bayram - CH2M, United States*

15:15

⌚ 15:15 - 15:45

Break

## Refreshments, exhibition, and networking

Hall 2B

15:45

⌚ 15:45 - 17:30

Stream 1

## Armoured breakwaters

Auditorium 1A

- 15:50 - 16:10 Design and construction of the Cubipod® armored west breakwater for the outer port of A Coruña (Spain)  
*Antonio Corredor - Sociedad Anónima Trabajos y Obras (SATO), Spain*
- 16:10 - 16:30 Armourstone for berm breakwaters  
*Sigurdur Sigurdarson - IceBreak Consulting Engineers & Icelandic Road and Coastal Authority, Iceland*
- 16:30 - 16:50 Hydraulic response & placement methods for a new single-layer concrete armour unit called C-ROC™  
*Sylvain Perrin - ARTELIA, France*
- 16:50 - 17:10 Automated industrial production of ACCROPODE™ II armour units: Case of "NRL" in Réunion Island  
*Moncef Ait Fora - APS, France*

⌚ 15:45 - 17:30

Stream 2

## Understanding hydro/morpho-dynamic impacts for design

Auditorium 1B

- 15:50 - 16:10 Tidal lagoon Swansea Bay: Modelling the effects of the scheme on marine physical environment  
*Adam Fulford - ABPmer, United Kingdom*
- 16:10 - 16:30 Evolution of offshore sandbanks and channels and their influence on shoreline behaviour in a high energy environment using induction modelling at Great Yarmouth  
*Phil Barber - Shoreline Management Partnership, United Kingdom*
- 16:30 - 16:50 Hydrodynamic and morphological response of the Mersey Estuary to the on-going Mersey Gateway bridge construction works  
*Adrian Wright - AECOM, United Kingdom*
- 16:50 - 17:10 Pagham Harbour: Managing a dynamic coast for people and the environment  
*Colin Scott - ABPmer, United Kingdom*

# ICE Coasts, Marine Structures and Breakwaters 2017



⌚ 15:45 - 17:30

Stream 3

## Developments in overtopping (B)

Auditorium 1C

- 15:50 - 16:10 The new EurOtop Neural Network tool for an improved prediction of wave overtopping  
Barbara Zanuttigh - *Università di Bologna - DICAM*
- 16:10 - 16:30 Causes for increased wave overtopping on rubble mound breakwaters and revetments  
Pieter Bakker - *DMC, Netherlands*
- 16:30 - 16:50 The conundrum of specifying very low wave overtopping discharges  
Eunice Silva - *HR Wallingford, United Kingdom*
- 16:50 - 17:10 Wave overtopping hazard to pedestrians: video evidence from real accidents  
Claudio Sandoval - *University of Edinburgh, United Kingdom*

# PROGRAMME

## 7 September

08:15

⌚ 08:15 - 09:15

### Registration, refreshments, and exhibition

ACC Main Entrance and Hall 2B

09:20

⌚ 09:20 - 11:00

Plenary

### Opening Plenary

Auditorium 1A

Chair: Kevin Burgess - Organising Committee Chair, Coasts, Marine Structures, and Breakwaters 2017

- 09:40 - 10:00 Alderney and Jersey "harbours of refuge" – what was built, why did they fail, and what has remained?  
William Allsop - *HR Wallingford, United Kingdom*
- 10:00 - 10:20 Construction aspects of the civil works for the storm surge barrier at Chioggia inlet – Venice  
Paolo De Girolamo - *La Sapienza University of Rome, Italy*
- 10:20 - 10:40 Adaptation to sea level rise in cities: Lessons from present examples of land subsidence  
Miguel Esteban - *The University of Tokyo, Japan*

11:00

⌚ 11:00 - 11:30

Break

### Refreshments, exhibition, and networking

Hall 2B

11:30

⌚ 11:30 - 13:00

Stream 1

### LNG terminals

Auditorium 1A

- 11:55 - 12:15 Challenges, opportunities and design impacts for different construction methods on Curtis Island LNG Jetties, Australia  
Cessel Chang - *Arup, United Kingdom*
- 12:15 - 12:35 Designing out the need for a breakwater, studies for floating LNG terminals and alternative mooring solutions  
Gillian Millar - *Moffatt & Nichol, United States*

# ICE Coasts, Marine Structures and Breakwaters 2017



⌚ 11:30 - 13:00

Stream 2

## Upgrading existing infrastructure

Auditorium 1B

- 11:35 - 11:55 Alderney breakwater, a developed rehabilitation solution  
*Ole Jensen - COWI*
- 11:55 - 12:15 Appraisal of Lochranza Ferry Terminal for a hybrid-fuel ferry  
*Martin Kirkpatrick - Arch Henderson LLP, United Kingdom*
- 12:15 - 12:35 St Mary's Harbour improvement works  
*Rients Jan Veldkamp MEng (Hons), CEng, MICE - Kier Infrastructure, United Kingdom*

⌚ 11:30 - 13:00

Stream 3

## Armour testing

Auditorium 1C

- 11:35 - 11:55 Measuring damage in physical model tests of rubble mounds  
*Bas Hofland - Deltares, Netherlands*
- 11:55 - 12:15 Physical modelling of breakwaters armoured with tetrapods  
*Otavio Sayao - Stantec Consulting Ltd, Canada*
- 12:15 - 12:35 3D physical modelling and revetment design for the Billy Bishop Toronto City airport extension  
*Scott Baker - National Research Council Canada, Canada*

13:00

⌚ 13:00 - 14:00

Break

## Lunch, exhibition, and networking

Hall 2B

14:00

⌚ 14:00 - 15:45

Stream 1

## Beaches and shorelines

Auditorium 1A

- 14:05 - 14:25 Examples of coastal catch-up including barrier roll-back, marsh and brick-earth cliff erosion in Southeast England  
*Uwe Dornbusch - Environment Agency, United Kingdom*
- 14:25 - 14:45 Constanta coastline rehabilitation, application of advanced models and practical solutions to develop a sustainable low-maintenance coastal defence scheme  
*Cuno Langeveld - Van Oord Dredging and Marine Contractors, Netherlands*
- 14:45 - 15:05 Chesil Beach at Portland, Dorset: Recovering from the winter 2013/14 storms  
*Alan Frampton - CH2M, United Kingdom*
- 15:05 - 15:25 The protection of the Happisburgh to Winterton coastal frontage - maintaining a sustainable approach despite long term uncertainty  
*Andrew Rouse - Environment Agency, United Kingdom*

⌚ 14:00 - 15:45

Stream 2

## Innovation Spotlight (A)

Auditorium 1B

- 14:05 - 14:10 Advanced marine asset survey  
*Andrew Walker - NIRAS Fraenkel Ltd, United Kingdom*
- 14:10 - 14:15 Technology changing marine inspections - Marq & Inspect  
*Oliver Davey - Arup, United Kingdom*
- 14:15 - 14:20 UK port preparedness for climate change: The benefits of appropriate adaptation  
*Esme Flegg - University of Southampton, United Kingdom*
- 14:20 - 14:25 Managing historic marine infrastructure; A conservators view.  
*Hilary Wyatt - Cardiff University, United Kingdom*
- 14:25 - 14:30 Improving habitat heterogeneity on coastal defence structures  
*Alice Hall - Bournemouth University, United Kingdom*
- 14:30 - 14:35 EConcrete Technologies: Bio-Enhanced Concrete for Coastal and Marine Infrastructure  
*Ido Sella - EConcrete Tech.*
- 14:35 - 14:40 Evaluation of an Xbloc-type breakwater design through data analysis, numerical and physical modeling  
*Saygin Derebay - Dolfin Engineering & Consultancy*

# ICE Coasts, Marine Structures and Breakwaters 2017



⌚ 14:00 - 15:45

Stream 3

## Waves - structures interaction

Auditorium 1C

- 14:05 - 14:25 Damage to the Mutriku OWC breakwater – some lessons from further analysis  
*Encarni Medina-Lopez - The University of Edinburgh, United Kingdom*
- 14:25 - 14:45 Hydrodynamic load acting on storage tank due to tsunami inundation flow  
*Susumu Araki - Osaka University, Japan*
- 14:45 - 15:05 A study on the behavior of a relatively small caisson floating in wave fields and its effective installation method  
*Yasuo Kotake - Toyo Construction Co., Ltd., Japan*
- 15:05 - 15:25 Wave overtopping and loading for the recurved parapet on the crest of rubble mound breakwater  
*Sang-Ho Oh - Korea Institute of Ocean Science and Technology, South Korea*

15:45

⌚ 15:45 - 16:15

Break

## Refreshments, exhibition, and networking

Hall 2B

16:15

⌚ 16:15 - 17:45

Stream 1

## Construction in ports

Auditorium 1A

- 16:20 - 16:40 Protecting port construction works in open sea- Hadarom Port, Ashdod, Israel  
*Noa Oren - Israel Ports Development and Assets Company Ltd., Israel*
- 16:40 - 17:00 Protecting the new deep water berth at the Liverpool 2 Container Terminal  
*Lizzie Chellew - Van Oord UK Ltd.*
- 17:00 - 17:20 Developments for the Gwynt-y-Môr offshore wind farm at Mostyn  
*Gordon Cameron - Mott MacDonald Ltd, United Kingdom*

⌚ 16:15 - 17:45

Stream 2

## Coastal developments

Auditorium 1B

- 16:20 - 16:40 Cadzand-Bad complex integral design of primary flood defences, marina and public space  
*Richard de Rover - Delta Marine Consultants, Netherlands*
- 16:40 - 17:00 Shore protection with beach islands

*Christian Helledie - COWI*

- 17:00 - 17:20 Coastal protection as a platform for regeneration – Colwyn Bay waterfront project as an exemplar for other UK coastal resorts  
*Benjamin Poulton - Mott MacDonald, United Kingdom*

⌚ 16:15 - 17:45

Stream 3

## Developments in overtopping (A)

Auditorium 1C

- 16:20 - 16:40 The influence of geometrical shape changes on wave overtopping: A laboratory and SPH numerical study  
*Shudi Dong - University of Warwick*
- 16:40 - 17:00 Experimental study of the mean wave overtopping rate of berm breakwaters at different wave steepness conditions  
*Karthika Pillai - Griffith University, Australia*
- 17:00 - 17:20 Recalibration of overtopping roughness factors of different armour types  
*Mads Røge Eldrup - Aalborg University, Denmark*

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## Marine energy solution providers

Engage with the engineers responsible for selecting devices and designs and showcase your solutions to get ahead of the competition

## NEW THIS YEAR

- An amazing venue in Liverpool, a culturally rich city with excellent international connectivity
- Shell scheme exhibition, tailored to your need
- Innovation spotlight with poster presentation and stands for start-ups and SME's
- Dedicated meeting point to increase knowledge sharing and maximise technology showcase

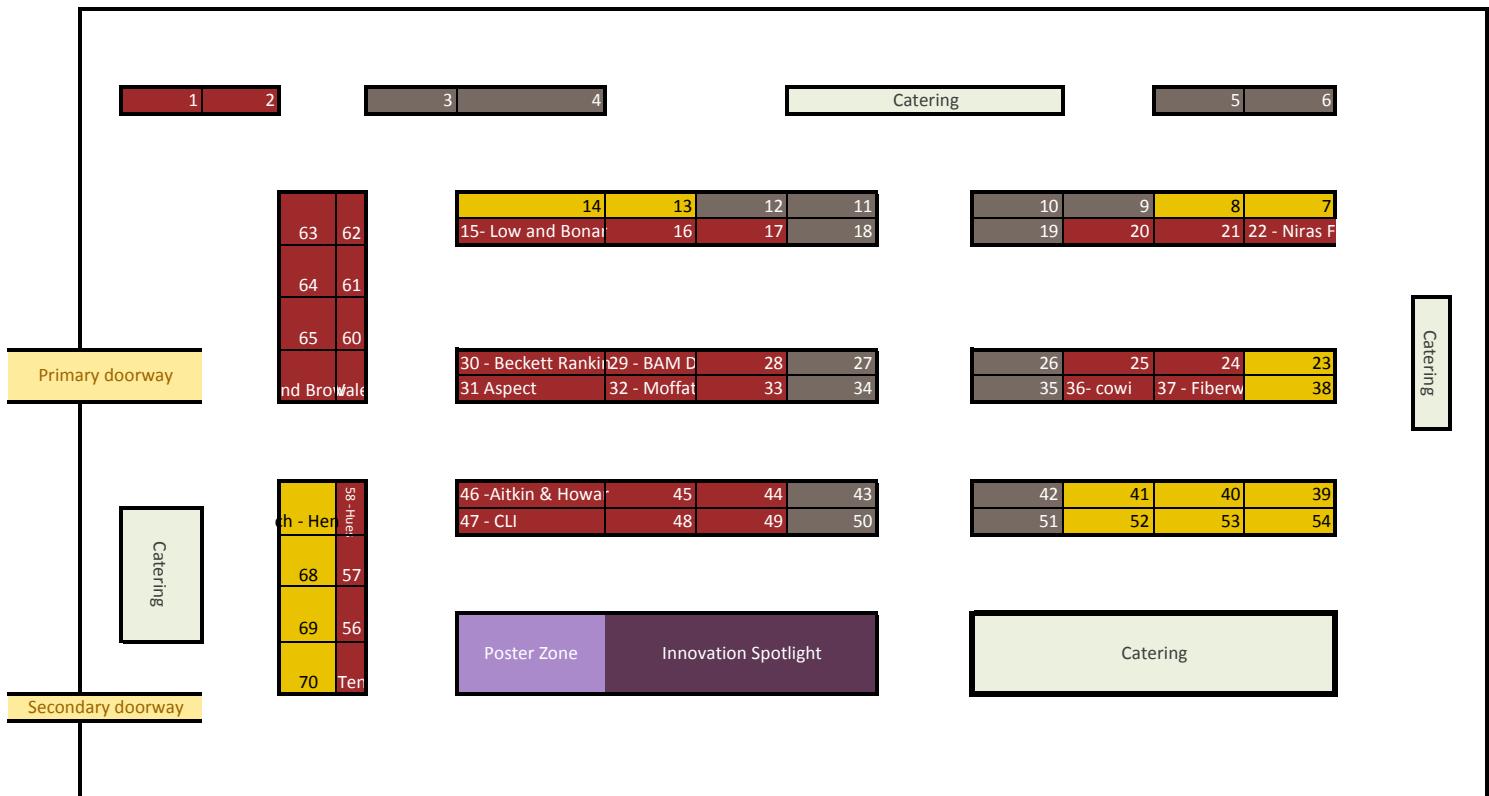


## Venue

We are delighted to be able to take the next Coasts, Marine Structures and Breakwaters conference to the city of Liverpool. With excellent transport connectivity and a state-of-the-art conference and exhibition centre, ACC Liverpool, the city provides a perfect location for this international event.

Known as the city of The Beatles, culture and sport and famed for its maritime heritage, humour and hospitality, Liverpool is certain to leave a lasting impression on delegates and exhibitors alike.

# FLOORPLAN ACC LIVERPOOL



#### Exhibition options



Innovation spotlight

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