

<b>PERSONAL INFORMATION</b>	
Full name	Maria <b>Cristina</b> dos Santos Cabaço <b>Afonso</b>
Date of birth	3th of June 1966
Nationality	Portuguese
<b>QUALIFICATIONS</b>	<p>Master of Science in Hydraulic and Water Resources by <i>Instituto Superior Técnico</i> (IST), Technical University of Lisbon, in 2008.</p> <p>Post-graduate degree in Maritime Transport, Port Management and Intermodal Transport by <i>Instituto Superior de Transportes</i>, in 2001.</p> <p>Civil Engineering, Communication Routes and Transport Engineering by <i>Instituto Superior de Engenharia de Lisboa</i> (ISEL), Polytechnic High School of Lisbon, in 1994.</p> <p>Technical Civil Engineering by <i>Instituto Superior de Engenharia de Lisboa</i> (ISEL), Polytechnic High School of Lisbon, in 1989.</p>
<b>AREAS OF EXPERTISE</b>	Maritime hydraulics, Port engineering, Coastal engineering, Sea outfalls and intakes.
<b>CHARTMENTSHIPS</b>	Senior Member and Specialist in Hydraulics and Water Management of the Portuguese Order of Engineers N° 38493.
<b>CURRENT POSITION</b>	
Nov 2018 - ....	Technical Director and Managing Partner of <i>OCEANING - Engenheiros Consultores, Lda.</i>
<b>FORMER POSITIONS</b>	
Jan 1990 - Jul 2018	Maritime Hydraulics consultant in <i>WW - Consultores de Hidráulica e Obras Marítimas S.A.</i>
Mar 2007 - Sep 2007	Internship under the Masters in Hydraulics and Water Resources of the Ports and Beaches Division, Hydraulics Department, in <i>Laboratório Nacional de Engenharia Civil, I.P. (LNEC)</i> .
Apr 1987 - Nov 1989	Scholarship in Beach and Harbour Division, Hydraulics Department, in <i>Laboratório Nacional de Engenharia Civil, I.P. (LNEC)</i> .
<b>CONTACTS</b>	e-mail: <a href="mailto:cristina.afonso@oceaning.pt">cristina.afonso@oceaning.pt</a> ; internet: <a href="http://www.oceaning.pt">www.oceaning.pt</a> ; phone: (+351) 217 780 088
<b>LANGUAGES</b>	Portuguese (native language), english and french.

**PROFESSIONAL EXPERIENCE**

<b>RESEARCHER IN LNEC UNDER THE SCOPE OF PHYSICAL MODELLING STUDIES</b>	<p>During her research internship, has collaborated and developed 2D and 3D physical model studies for the determination of wave propagation, overtopping, stability of breakwater in harbours and other maritime structures.</p> <p>In the studies had provided support on the physical model tests, analysis of the results and reports, being the following the most relevant projects:</p> <ul style="list-style-type: none"> <li>• Port of <i>Sines</i> (Portugal). Breakwater east stability.</li> <li>• Port of <i>Póvoa de Varzim</i> (Portugal). Breakwater stability.</li> <li>• Port of <i>Ericeira</i> (Portugal). Breakwater stability.</li> <li>• Marina of <i>Cascais</i> (Portugal). Wave disturbance studies.</li> <li>• Port of <i>Porto Santo</i> (Madeira). Wave disturbance studies.</li> <li>• <i>Praia da Vitória</i> (Azores - <i>Terceira</i> Island). Breakwater stability.</li> </ul>
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**PROFESSIONAL EXPERIENCE**

<p><b>RESEARCHER IN LNEC UNDER THE SCOPE OF PHYSICAL MODELLING STUDIES</b></p>	<ul style="list-style-type: none"> <li>• Port of <i>Flores</i> (Azores - <i>Flores</i> Island). Breakwater stability.</li> <li>• <i>Ponta Delgada</i> Seaside Road Protection (Azores - <i>São Miguel</i> Island). Revetment stability.</li> <li>• Port of Saint-Quay-Portrieux (France). Wave disturbance studies and stability of the breakwater.</li> </ul>
<p><b>SPECIALIZATION AREAS</b></p>	<p>Provided support on the physical model studies, result analysis and reporting, being the most relevant projects the following:</p> <ul style="list-style-type: none"> <li>• Writing of Tender Proposals.</li> <li>• Development of Studies and Project designs.</li> <li>• Elaboration of ITT documentation.</li> <li>• Development of Technical Notes and Reviews.</li> <li>• Site Supervision.</li> <li>• Works inspection and monitoring.</li> <li>• Elaboration of applications for R&amp;D projects.</li> </ul> <p>A short list of key project on each area is presented below, comprising Consultancy and Site Supervision projects.</p>
<p><b>SHORE PROTECTION</b></p>	<ul style="list-style-type: none"> <li>• <b>Refurbishment of the Shore Protection of the Marginal Atlantic in Vila do Conde (Portugal)</b> - Detail Design. <i>Docapesca, Portos e Lotas, S.A.</i>. 2018.</li> <li>• <b>Maritime Protection Beach Between Forte Giribita and Cruz Quebrada (Portugal)</b> - Detail design. <i>Câmara Municipal de Oeiras</i>. 2010.</li> <li>• <b>Monitoring Plan of the Portuguese Continental Shoreline (Portugal)</b> - Consortium WW/DHI - Water &amp; Environment/IMAR. INAG.2001.</li> <li>• <b>Safi Cliff Stabilization (Marocco)</b> - Detail Design. <i>Ministère de l'Équipement</i>. 2001.</li> <li>• <b>Marginal Road Protection Between Gíbalta and Paço d'Arcos (Portugal)</b> - Detail Design. <i>JAE - Junta Autónoma das Estradas</i>. 1991.</li> </ul>
<p><b>HARBOURS AND PORT TERMINALS</b></p>	<ul style="list-style-type: none"> <li>• <b>Floating pontoons at Tavira Fishing Port</b> - Detail Design. <i>DOCAPESCA, S.A.</i>. 2019.</li> <li>• <b>Breakwater Extension and Platform extension for the Port of Casa (Azores - Corvo Island)</b> - Detail Design. <i>Portos dos Açores, S.A.</i>. 2014.</li> <li>• <b>Shore Protection Study of the Port of Laayoune (Marocco)</b> - Detail Design. <i>ANP - Agence Nationale des Ports</i>. 2012.</li> <li>• <b>Fishing Port in Tanger. Stability Assessment of the Breakwater and wave Overtopping studies (Marocco)</b> - Detail Design. <i>Société d'Aménagement pour la Reconversion de la Zone Portuaire de Tanger Ville/Somagec</i>. 2011.</li> <li>• <b>Port of Porto Moniz (Madeira)</b> - Detail Design. <i>SREST - Secretaria Regional do Equipamento Social e Transportes</i>. 2001.</li> <li>• <b>Commercial Port of Caniçal (Madeira)</b> - Detail Design (3 phases). <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 1992-2005.</li> </ul>
<p><b>MARINAS AND RECREATIONAL PORTS</b></p>	<ul style="list-style-type: none"> <li>• <b>Madalena Recreational Port (Azores - Pico Island)</b> - Detail Design. <i>Administração dos Portos do Triângulo e do Grupo Ocidental, S.A.</i>. 2010.</li> <li>• <b>Vilamoura's Marina outer Port. Refurbishment for the mooring of super-yates (Portugal)</b> - Detail Design. <i>Marina de Vilamoura S.A.</i>. 2009.</li> <li>• <b>Marina do Lorde (Madeira)</b> - Detail Design. <i>Marina do Lorde S.A.</i>. 1998.</li> <li>• <b>Boaventura's Recreational Port (Madeira)</b> - Detail Design. <i>DRP - Direcção Regional de Portos</i>. 1994.</li> </ul>



PROFESSIONAL EXPERIENCE	
MARINAS AND RECREATIONAL PORTS	<ul style="list-style-type: none"> <li>• <b>Funchal's Marina Expansion (Madeira)</b> - Detail Design. <i>DRP - Direcção Regional de Portos</i>. 1993.</li> </ul>
MISCELANIOUS PROJECTS	<ul style="list-style-type: none"> <li>• <b>Sediment Transfer for the Optimization of the Hydrodynamic Equilibrium Works of the Aveiro River (Portugal)</b> - PROMAM's Detailed Design review and collaboration in the development of the ITT documentation. <i>Polis Litoral Ria de Aveiro, S.A.</i>. 2018.</li> <li>• <b>Shoreline Landscaping General Plan of the Beaches of Samouqueira, Porto Covinho and Praia Grande in Porto Covo</b> - Detail Design. <i>Polis Litoral Sudoeste – Sociedade para a Requalificação e Valorização do Sudoeste Alentejano e Costa Vicentina, S.A.</i>. 2014.</li> <li>• <b>Intervention on the Creeks of Santa Luzia and João Gomes (Madeira)</b> - Detail Design. <i>SREST - Secretaria Regional do Equipamento Social e Transportes</i>. 2011.</li> <li>• <b>Porto Santo Port Infrastructure Refurbishment (Madeira - Porto Santo Island)</b> - Detail Design. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2005.</li> <li>• <b>Algarve Artificial Reefs</b> - Detail Design. <i>IPIMAR – Instituto de Investigação das Pescas e do Mar</i>. 1998.</li> </ul>
PORT PLANNING	<ul style="list-style-type: none"> <li>• <b>Porto Santo Port Navigability and Operations Study (Madeira - Porto Santo Island)</b>. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2006.</li> <li>• <b>Canical Port Master Plan (Madeira)</b>. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 1989-2006.</li> <li>• <b>Porto Santo Port Master Plan (Madeira - Porto Santo Island)</b>. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2002.</li> <li>• <b>Funchal Port Master Plan (Madeira)</b>. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2002.</li> </ul>
REMEDIAL AND REPAIR	<ul style="list-style-type: none"> <li>• <b>Breakwater Repair Works at Paul do Mar Port (Madeira)</b> - Detail Design. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2019.</li> <li>• <b>Breakwater Repair Works at Ribeira Brava Port (Madeira)</b> - Detail Design. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2018.</li> <li>• <b>Stabilization of the Submarine Pipe on Ílhavo River - Deepening of the Outfall Pipelines and Cables (Portugal)</b> - Detail Design. <i>AdCL - Águas do Centro Litoral</i>. 2017.</li> <li>• <b>Espinho e São Jacinto Outfall Pipelines. Outfall adaptations and Cathodic Protection Renewal (Portugal)</b> - Detail Design. <i>AdCL - Águas do Centro Litoral, S.A.</i>. 2016.</li> <li>• <b>Remedial Work on Guia's Water Treatment Plant Outfall Pipeline Split Box's Foundation (Portugal)</b> - Detail Design. <i>SANEST - Grupo Águas de Portugal</i>. 2014.</li> <li>• <b>Funchal Breakwater Grand Repair Works (Madeira)</b> - Detail Design. <i>DRP - Direcção Regional de Portos</i>. 1990.</li> </ul>
INTAKES AND OUTFALLS PIPELINES AND UNDERWATER CABLES SYSTEMS	<ul style="list-style-type: none"> <li>• <b>Ta'Barkat L/O Xghajra Intake and Outfall Pipelines (Island of Malta)</b> - Detail Design and technical support during construction. <i>Malta Water Service Corporation/ETERMAR/POLIDANO GROUP</i>. 2009-2011.</li> </ul>



**PROFESSIONAL EXPERIENCE**

<p>INTAKES AND OUTFALLS PIPELINES AND UNDERWATER CABLES SYSTEMS</p>	<ul style="list-style-type: none"> <li>• <b>Tanger Port Intake and Outfall Pipelines (Marocco)</b> - Detail Design and technical support during construction. Société des Eaux et de l'Electricité du Nord/ETERMAR/SOMAGEC/ GEOCEAN. 2006-2008.</li> <li>• <b>Tetouan-Azla Intake and Outfall Pipelines (Marocco)</b> - Detail Design and technical support during construction. Société des Eaux et de l'Electricité du Nord/ETERMAR/SOMAGEC/ GEOCEAN. 2006-2008.</li> <li>• <b>Lagoa / Meco Intake and Outfall Pipelines (Portugal)</b> - Detail Design. SIMARSUL - Sistema Integrado Multimunicipal de Águas Residuais da Península de Setúbal, S.A.. 2007.</li> </ul>
<p>INTAKES AND OUTFALLS PIPELINES AND UNDERWATER CABLES SYSTEMS</p>	<ul style="list-style-type: none"> <li>• <b>Intake tower of the Desalination Plant in Beni Saf (Argélia)</b> - Detail Design. SETH/OFM/IC. 2007.</li> <li>• <b>São Jacinto Intake and Outfall Pipelines (Portugal)</b> - Detail Design and Technical Support During Construction. ETERMAR - Engenharia &amp; Construção S.A. (SIMRIA - Saneamento Integrado dos Municípios da Ria, S.A.).1996-1998.</li> <li>• <b>Underwater Power Cables for the Culatra and Armona Islands. Ria Formosa Span (Portugal)</b> - Detail Design. ETERMAR - Engenharia &amp; Construção S.A., in 1990/91.</li> </ul>
<p>SITE SUPERVISION AND WORK INSPECTION</p>	<ul style="list-style-type: none"> <li>• <b>Guia's intake and outfall pipeline maintenance works inspection and site supervision (Portugal)</b> - Site supervision. SANEST - Saneamento Básico da Costa do Estoril S.A.. 2003-2004.</li> <li>• <b>Matosinhos Intake and Outfall Pipeline (Portugal)</b> - Site Supervision. Câmara Municipal de Matosinhos. 2000.</li> <li>• <b>Refurbishment of the Area Adjacent to Fishing Port in Setúbal (Portugal)</b> - Site Supervision. APSS - Administração do Port of Sesimbra e Setúbal, S.A.. 1999-2000.</li> <li>• <b>Bulk Solids Terminal of the Figueira da Foz Port (Portugal)</b> - Site Supervision. DGPNTM - Direção Geral de Portos, Navegação e Transportes Marítimos. 1997-1998.</li> </ul>
<p>RESEARCH AND DEVELOPMENT PROJECTS (R&amp;D)</p>	<ul style="list-style-type: none"> <li>• <b>Experimental Study of Forces on a Submarine Outfall: Influence of Incident Wave Direction, of Stabilizing Concrete Weights and Pipe Distance From the Bottom.</b> Project HYDRALAB IV. UGR-Spain, UNAM-México, LNEC-Portugal and WW-Portugal. 2012-2015.</li> <li>• <b>AREDIS – Experimental Study of Stability of Submarine Outfalls in Muddy Soils.</b> Project R&amp;D - Companies Incentive System for Research and Technologies Development. WW - Consultores de Hidráulica e Obras Marítimas S.A. and LNEC – Laboratório Nacional de Engenharia Civil, I.P.. 2012-2014.</li> </ul>

**PUBLICATIONS**

	<p>Author or co/author of the following publications in National and International Scientific meetings and of a Master's Thesis.</p> <ul style="list-style-type: none"> <li>• Mendoza, E., Neves, M. G., Afonso, M. C., Casarín, R., Reis, M. T., Clavero, M., Losada, M. (2014). <b>Experimental Study of Stability of Submarine Outfalls in Muddy Soils.</b> Paper presented at the 8th International Conference on Marine Waste Water Discharges and Coastal Environment. MWWD, St. Julien's Bay (Malta).</li> </ul>
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## PUBLICATIONS

- Neves, M. G., Mendonça, A., Didier, E., Reis, M. T., Inverno, J., Figueira, P., Afonso, M. C., Vilchez, M., Clavero, M., Sánchez, M., Losada, M. (2014). **Experimental Study of Forces on a Submarine Outfall : Influence of Incident Wave Direction of Stabilizing Concrete Weights and Pipe Distance from the Bottom**. Paper presented at the final projects meeting HYDRALAB IV. European Community Program. Lisbon (Portugal).
- Afonso, C., Neves, M. G., Didier, E., Ferreira, O., Silva, L.G., Afonso, C., Lopes, M. R., Fortes, C.J. (2013) **AREDIS – Adaptações para Reforçar a Estabilidade de Emissários Submarinos em Terrenos Lodosos (AREDIS - Experimental Study of Stability of Submarine Outfalls in Muddy Soils)**. Paper presented at the 8<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Lisbon (Portugal).
- Reis, M. T., Neves, M. G., Didier, E., Ferreira, O., Silva, L. G., Afonso, C., Lopes, M. R., Fortes, C. J. (2012). **Maritime Structures Wave Overtopping. The Portuguese Experience**. Paper presented at the 2<sup>nd</sup> Mediterranean Days of Coastal and Port Engineering Infrastructures, Logistics and Sustainability. AIPCN/PIANC, Valencia (Spain).
- Afonso, C., Figueira, P., Pipa, I. (2011). **Projecto do Emissário Submarino de Ta'Barkat L/O Xghajra (The design of de submarine outfall of Ta'Barkat L/O Xghajra - Malta Island)**. Paper presented at the 7<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Oporto (Portugal).
- Mendonça, A., Losada, M. A., Reis, M. T., Neves, M. G., Figueira, P., Afonso, C. (2011). **Incorporação da Avaliação Probabilística de Riscos e de Métodos de Optimização no Projeto de Emissários Submarinos (Incorporation of Probabilistic Assessment of Risks and Methods of Optimization in the Design of Submarine Outfall)**. Paper presented at the 7<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Oporto (Portugal).
- Figueira, P., Afonso, C., Afonso, A. Ruivo, N. (2009). **Projecto e Construção de Dois Emissários Submarinos em Marrocos (The Design of the Submarine Outfall of Tanger and Tétouan-Azla in Marocco)**. Paper presented at the 6<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Funchal (Madeira).
- Figueira, P., Afonso, C., Afonso, A. Ruivo, N. (2008). **Aspects of the Design and Construction of the Submarine Outfall of Tanger Port**. Paper presented at the 5th International Conference on Marine Waste Water Discharges and Coastal Environment, MWWD, Dubrovnik (Croatia).
- Afonso, C., Neves, M.G., Silva, L. G., Teixeira, T. T. (2008). **Hydraulic Stability of Antifer Cubes on Rubble Mound Breakwaters, Study on 3D Physical Model**. Paper presented at the 2th International Conference on the Application of Physical Modelling to Port and Coastal Protection, Coastlab08, Bari (Italy).
- Afonso, C., Neves, M.G., Silva, L. G., Teixeira, T. T. (2007). **Influência da Obliquidade da Agitação e da Densidade de Colocação dos Blocos Antifer na Estabilidade de Obras Marítimas de Talude (Stability of Rubble-Mound Maritime Structures: Influence of Angle of Wave Attack and of Placement Density of Antifer Blocks)**. Paper presented at the 5<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Lisbon (Portugal).
- Afonso, C., Figueira, P., Epifâneo, L. (2007). **Projecto do Emissário Submarino da ETAR Lagoa/Meco (The Design of the Submarine Outfall of Lagoa-Meco)**. Paper presented at the 5<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Lisbon (Portugal).



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**PUBLICATIONS**

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Thesis

- Figueira, P., Afonso, C. (2005). **Alguns Aspectos do Projecto de Emissários Submarinos (Several Aspects of the Design of Submarine Outfalls)**. Paper presented at the 4<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Angra do Heroísmo (Azores-Terceira Island).
  - Tito, T., Afonso, C. (2001). **Molhe Exterior do Porto do Caniçal. Concepção e Dimensionamento (Extension of the main breakwater of the Port of Caniçal. Design and dimensioning (Madeira))**. Paper presented at the 2<sup>as</sup> Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Sines (Portugal).
  - Afonso, C. (2008). **Influência da Obliquidade da Agitação e da Densidade de Colocação dos Blocos Antifer na Estabilidade de Obras Marítimas de Talude (Stability of Rubble-Mound Maritime Structures: Influence of Angle of Wave Attack and of Placement Density of Antifer Blocks)**. PhD Thesis prepared at *Laboratório Nacional de Engenharia Civil (LNEC)* for the degree of Master of Science in Hydraulic and Water Resources, *Instituto Superior Técnico (IST)*, Technical University of Lisbon (Portugal).
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Lisbon, january 2020

