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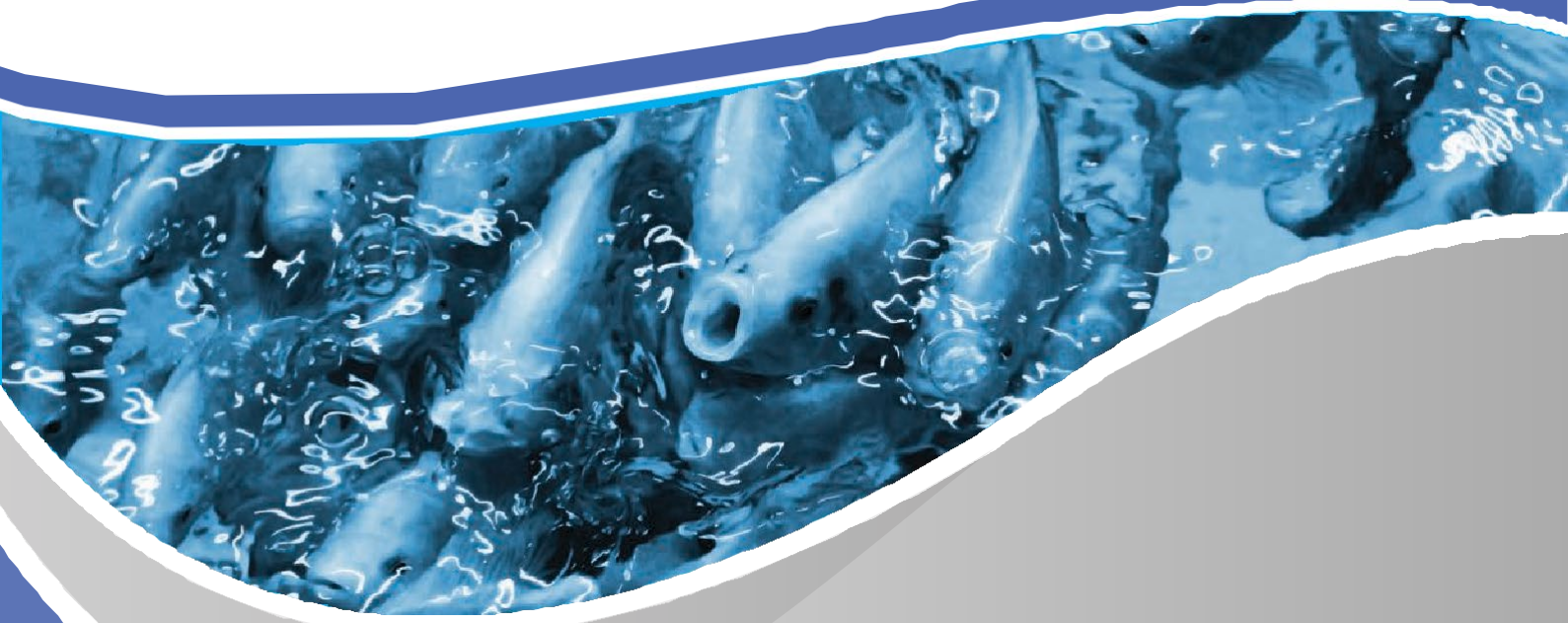
AquaBioTech Group

ABT Aquaculture

Capability Statement



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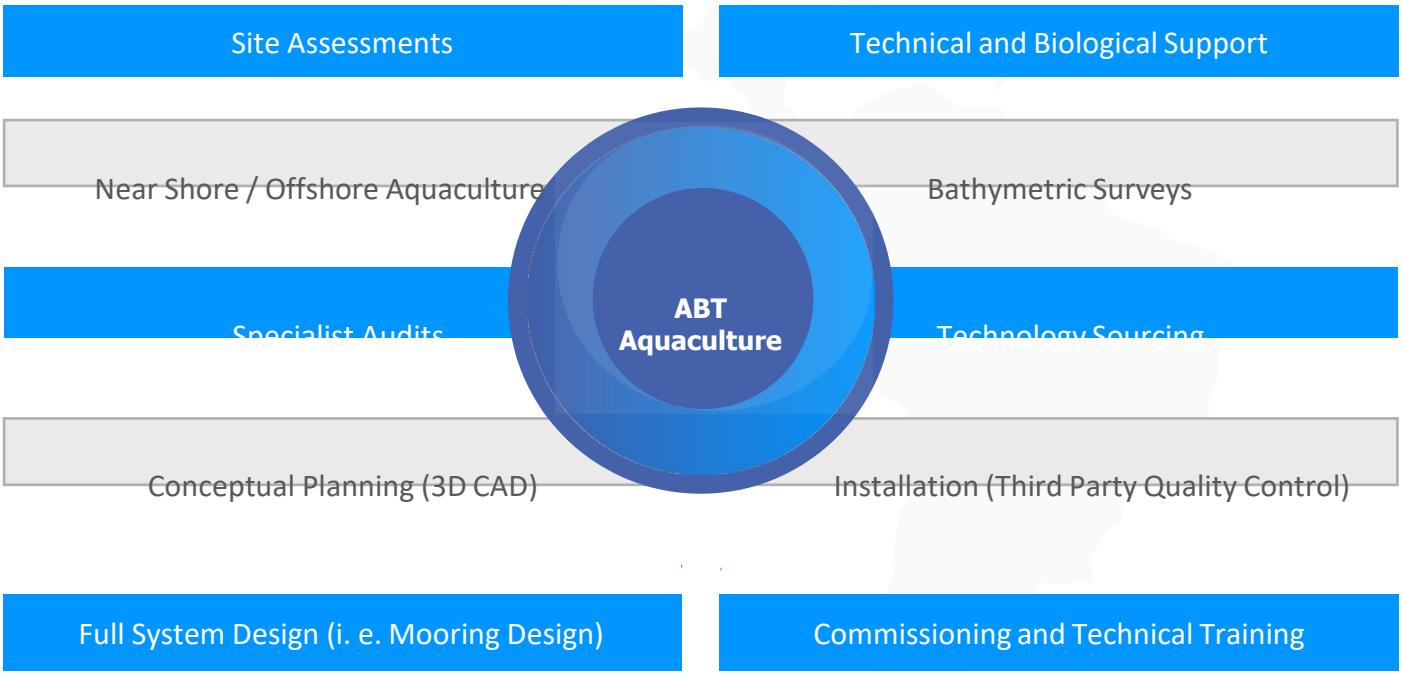
The **AquaBioTech Group** is an international aquaculture, fisheries and marine consultancy and engineering company. Its headquarters are strategically located in the centre of the Mediterranean, on the island of Malta, and operaties globally with clients in over fifty-five countries.

The **AquaBioTech Group** undertakes a variety of aquaculture, fisheries and aquatic environmental projects through its regional offices and selected partners throughout the world. The vast majority of the company's work is related to the marine or aquatic environment, encompassing aquaculture developments, market research/intelligence, through project feasibility assessments, finance acquisition, project management, technology sourcing and technical support and training. Within the **AquaBioTech Group** there are various divisions that focus on different business areas:

ABT Aquaculture has developed a number of highly efficient and cost effective Recirculating Aquaculture Systems (RAS). These can be applied to hatcheries, broodstock, aquatic research, aquaponic systems and ongrowing operations. We constantly strive to be at the forefront of our industry by testing and developing innovative technologies.

ABT Aquaculture also offers consultancy services for all aquaculture related projects. We have become well established as a provider of due-diligence and risk assessments for all forms of aquaculture operations, as well as consulting on operational issues and improvements in hatcheries, fish farms and processing facilities.



FEASIBILITY STUDIES

For new developments, the **AquaBioTech Group** can undertake a complete assessment for projects, including site selection, financial reviews, risk assessments and technical / non-technical surveys.
For existing developments, the **AquaBioTech Group** undertakes complete technical assessments and troubleshooting for a variety of on growing operations, developing detailed proposals for problem mitigation.
The **AquaBioTech Group** also advises on regulatory control, infrastructure requirements, environmental issues and other matters necessary to ensure sustainable aquaculture development.

BUSINESS PLANNING

Aquaculture entrepreneurs must identify their business structure before operations can begin. They must understand the ins and outs of their business, from its core operations to its customer service. This analysis of the business and its external environment will help to drive business decisions and develop business strategies. In similar ways, investors, financial institutions and authorities require them to provide a comprehensive business plan in order to understand the concept behind the investment and to ensure the entrepreneur is well prepared.
The **AquaBioTech Group** has provided business plan preparation services for aquaculture and fisheries projects for many years for a diverse range of projects.

SPECIALIST AUDITS

The **AquaBioTech Group** is often called upon to execute specialist assessments for aquaculture projects. These audits are undertaken for entities such as insurance companies, financial institutions, corporate investors, development agencies and public, private and intergovernmental bodies for all sizes and types of aquaculture operations.

DUE DILIGENCE AUDITS

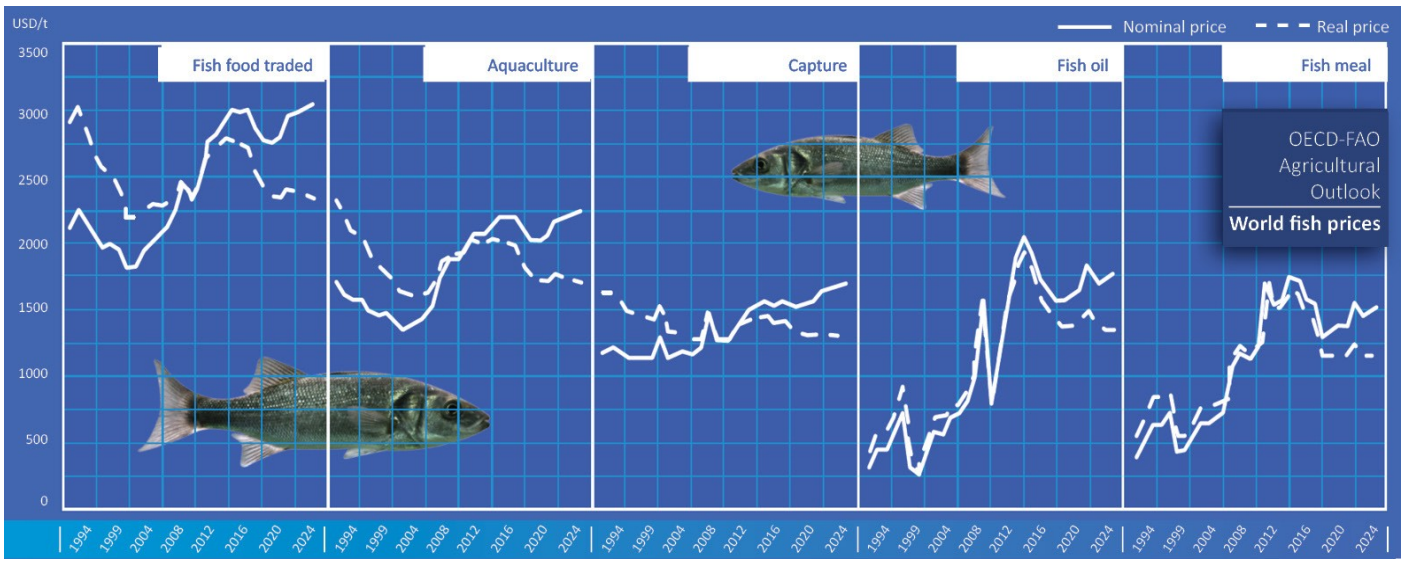
Technical, operational and financial due diligence audits are undertaken in conjunction with legal and finance auditing teams to assess the overall status of a potential aquaculture investment asset. The **AquaBioTech Group** employs a unique approach based on extensive management expertise, market awareness and comprehensive technical knowledge of aquaculture operations to present detailed insight of an operation's strengths, weaknesses and opportunities.

MARKET RESEARCH & INTELLIGENCE

The **AquaBioTech Group** has a dedicated market research and intelligence team providing specialised services for clients ranging from industry stakeholders, associations, public bodies, development agencies and financial institutions. Market research and intelligence assessments are commissioned primarily serving the specific knowledge of the blue growth industry covering subjects from aquaculture and fisheries to fish health, nutrition, research, financing and trade facilitation processes.

Our portfolio includes a number of services including product surveys, regional support services, GIS based studies, business intelligence research, channel/ supply chain research, market sizing, and trade promotion preparedness studies. Complementary to market research and intelligence, the **AquaBioTech Group** provides several business and coaching services ranging from business planning and market entry assistance to export coaching and institutional and human resource development. The **AquaBioTech Group** ensures the legal and ethical collection and analysis of information whilst treating the data with the highest level of confidentiality and integrity.

Our international team, composed of skilled and experienced staff can provide access to valuable insight information of the markets. By working with local partners, we can provide accurate information and ensure data validation. Our team offers guidance in more than fifteen languages including English, Spanish, Italian, Portuguese, French, Polish, German, Dutch, Greek, Afrikaans, Arabic and Chinese. We work side by side with our clients to provide strategic guidance throughout the business development phase.



RISK MANAGEMENT AUDITS

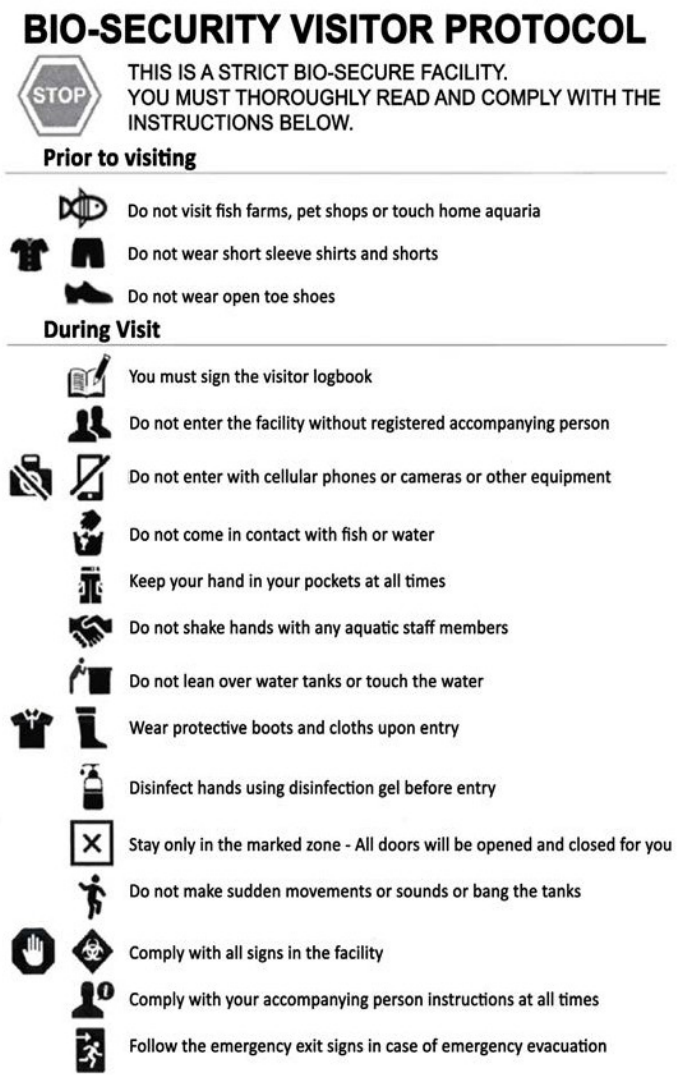
For insurance purposes, project planning or as an internal exercise, risk management audits are an important tool to identify, assess and prioritise threats. The **AquaBioTech Group**, combining multidisciplinary expertise in aquaculture operations can offer a complete approach to aquaculture risk management, utilising quantitative and qualitative methods to assess risks and recommend cost-efficient mitigation measures.

BIOSECURITY CONSULTANCY

Biosecurity is one of the most important aspects in animal production since it prevents the introduction, spread and transmission of disease into, within and between animal production facilities. Although basic in principle, biosecurity is one of the most challenging aspects of food production, as it encompasses the design, implementation and monitoring of specific measures at each step of the animal production process.
Insufficient or absent biosecurity on the contrary, poses a risk to the sustainability and continuity of the food production business, as economical losses from disease event can be potentially catastrophic. Therefore, stand-alone biosecurity audits are a much sought-after service. These can be performed for producers, risk managers, insurance companies or aquaculture investors.

The **AquaBioTech Group** places emphasis on biosecurity and animal welfare in its daily work, both in its R&D facilities as well as projects conductedfor clients. The **AquaBioTech Group** employs a comprehensive methodology to assess the exposure of a given animal production facility to disease risk, identify the critical control points for the implementation of biosecurity measures and propose risk mitigation measures based on cost-benefit analysis and industry-standard decision making tools. Moreover, our biosecurity consultancy services extend to offer education and training in best sampling practices, disease recognition, best disinfection practices, responsible use of pharmaceuticals and quality assurance for the purchase of fish stocks.

All the work undertaken by the **AquaBioTechGroup** is based on the knowledge provided by the latest international publications and conferences, regional biosecurity status and global alerts regardingreported diseases across the different sectors of the aquaculture industry.



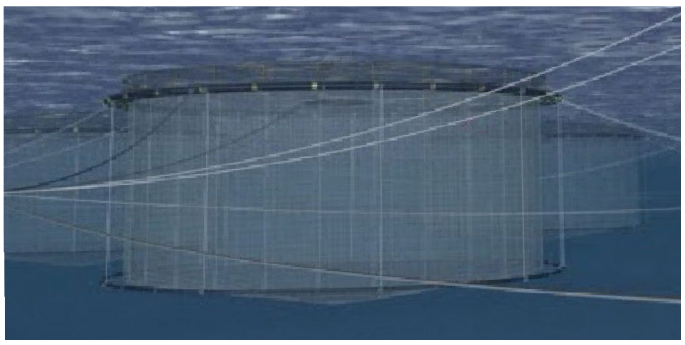
The **AquaBioTech Group** can provide a complete service from project design through to installation and commissioning. We have experience with cages from nearly all the major cage manufacturers as well as designing tailor made cage and mooring grids for specific projects.

SITE ASSESSMENTS

For new developments, the **AquaBioTech Group**can undertake a complete assessment for projects, including site selection, financial reviews and technical / non-technical surveys. For existing developments, **AquaBioTech Group** undertakes complete technical assessments and troubleshooting for a variety of on growing operations, developing detailed proposals for mitigation. The **AquaBioTech Group** also advises on regulatory control, infrastructure requirements, environmental issues and other matters necessary to ensure sustainable aquaculture development.

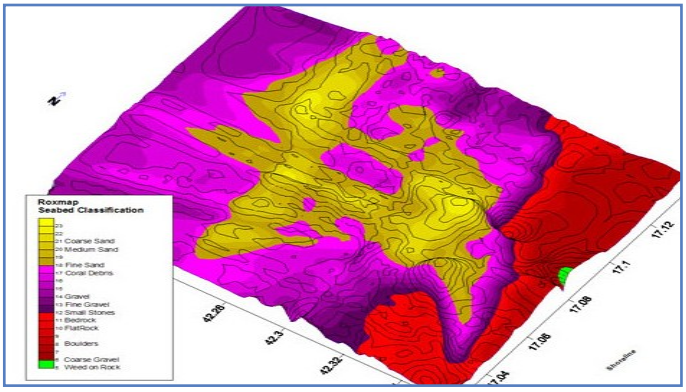
MOORINGS DESIGN

The design of any mooring grid is an essential part of any cage aquaculture project. The **AquaBioTech Group** is capable of preparing detailed structural plans for the creation of simple and complex mooring solutions for a variety of weather conditions.



BATHYMETRIC SURVEYS

Seabed assessments and bathymetric surveys are an integral part of any modern aquaculture development. The **AquaBioTech Group** uses a number of advanced survey and analysis methods so as to model and predict ideal site locations based on available and collected data.



EQUIPMENT

A large variety of technologies from various suppliers are required for any sort of new aquaculture development or existing venture. As part of the services the **AquaBioTech Group** offers its clients, the company sources a large variety of equipment ranging from nets, cages and vessels to oxygen meters and microscopes.

As the **AquaBioTech Group** does not manufacture any equipment of its own, we are able to offer our clients a truly independent assessment of which equipment is best for each project concerned. In conjunction with this and due to our extensive purchasing power, we are also able to secure the very lowest prices for our clients and ensure thatall products are compatible and functional for the project concerned.

OFF SHORE ACTIVITIES

Offshore cage aquaculture is widely recognisedas becoming in the future a major part of global aquaculture industry. Despite these projections technically there are still some major challenges that require high-level planning to make the operations feasible.
There is a number of companies that offer offshore cage solutions, but this is only one aspect of the operation and other technologies and operational procedures are just as important to consider. The **AquaBioTech Group** has experienced staff and personnel who can assist in all aspects of offshore cage farming from cages and moorings, to feeding, harvesting and service / support. Experienced in designing cage aquaculture projects in some of the most exposed sites, our engineers work with cage manufacturers and mooring experts to safely move fish farms further offshore.

NEAR SHORE ACTIVITIES

Whilst the availability of near-shore locations is rapidly decreasing due to competition with other users, there are still several countries where near-shore cage operations are feasible.

Undertaking intensive aquaculture close to shore poses several environmental issues such as water exchange modelling together with bioremediation and biological issues such as adequate oxygen levels in the water. These and many other factors require adequate consideration and planning before commencement of operations.

IMTA

Integrated multi-trophic aquaculture (IMTA) combines multiple species from different levels of the food chain in one system. The system normally consists of fed aquaculture, inorganic extractive and organic extractive species to create a balanced environment. IMTA utilises the excess feed, wastes and nutrients of the finfish for the growth of shellfish and marine plants. For IMTA, species selection and positioning are essential. The system design is engineered to optimise the utilisation of waste products of the cage aquaculture.

The **AquaBioTech Group** is establishing a pilot IMTA system off the coast of Malta, to utilize the fish farm effluents for further shellfish production and evaluate the site assessment method. This research is supported by the EU H2020 research and innovation programme within the collaborative project “TAPAS – Tools for Assessment and Planning of Aquaculture Sustainability” (www.tapas-h2020.eu) under Grant Agreement No. 678396. Coupling dispersion patterns and benthic community data, the pilot project aims to assess the environmental parameters that influence the feasibility, design and optimal species for an Integrated Multi-Trophic Aquaculture (IMTA) system in the specific environment.

OFF-SHORE MULTI USER PLATFORMS (MUP) AND MULTI-USE OF SPACE (MUS)

As maritime activity increases and coastal areas become more crowded, so does the competition for space. Expecting economic activities to move further offshore, smarter and more sustainable use of our seas is necessary. Mariculture technologies have a potential for combined use of sea space with other Blue Growth industries. Multi User Platforms integrating aquaculture facilities with renewable energy (wind, wave) and/or transportation facilities, share space and costs, and lead to reduced conflicts with other maritime users.

The **AquaBioTech Group**, with partners, is developing several projects that promote the synergy between aquaculture, marine renewables and desalination using the MUS and MUP approach. For instance wave energy devices can be installed close to a fish farm in locations up to six kilometres offshore. The wave energy device could then provide electricity directly to the fish farm reducing its costs and ensuring a supplyof sustainable energy. Surplus energy could be brought onshore to satisfy the energy needs of the farm's onshore facilities.

In addition, within Marine Protected Areas low impact sustainable blue economy activities could potentially be developed.

SHRIMP FARMING

Shrimp farms from large-scale extensive to small-scale intensive operations can be designed in-house.The company also offers technical assistance to existing farms in areas such as broodstock domestication, maturation and hatchery production. Most shrimp grow-out farms consist of outdoor ponds using a Zero-Water Exchange system.

AquaBioTech Group's experts can assist to all the different aspects of the shrimp farming development including :

- Seed Supply
- Site selection
- Species culture
- Culture Techniques
- Water Quality Management
- Pond Design / System Design
- Feeding Management Strategies
- Environmental Impact Assessment

In addition, the company is working towards establishing successful business and operation models for the development of RAS shrimp farms.