

# Chris Warner

## AQUATIC ENVIRONMENTAL SYSTEMS PTY LTD

RESUME JANUARY 2022



Top Left **1974** – Curator – Manager - Manly Marineland - shark release

Bottom Left **1989** – Curator – Manager Underwater World Mooloolaba opening day

Bottom Right **2013** – Consultant with client's sea lion

**1974 – 2022 = 47 years of hands-on experience and success as curator, designer, builder and professional consultant**



Personal Details

Name: .....Christopher John WARNER

Date of Birth: .....13 January 1951

Nationality: .....Australian / British

Address: .....108-112 Browns Road,  
Belli Park Queensland 4562  
Australia

Contact----- Mobile: +61 412 214 335  
Email: chris@aquaticsystems.com.au

**Qualifications, Certifications and Associations**

Trade Certificate (Fitting, Machining and Welding)  
Tool Making Certificate  
Certificate of Mechanical Engineering  
Certificate of Composites Engineering  
Registered Professional Diver – AS 2815  
Private aircraft pilots license

**Memberships**

WAZA (World Association of Zoos and Aquariums)

ASZK (Australian Society of Zoo Keepers)

AZA (American Zoological Association)  
(Peak body for zoo keeping professionals)

Zoo (Aquarium Association Australasia)  
(Peak body for zoological park & aquarium principals)

IOA (International Ozone Association)  
(Association of professional engineers involved in ozone & UV systems design)

AWA (Australian Water Association)  
(Peak body for Australian water quality engineers)

AALSO (Aquatic Animal Life Support Operators)  
(Peak international body for LSS designers, engineers & operators)

AFTCRA (Australian Freshwater Turtle Conservation & Research Association)  
(Turtle research & conservation group)

EAAM (European Association for Aquatic Mammals)  
(Peak body for Marine Mammal Standards)

QWRC (Queensland Wildlife Rehabilitation Council)  
(Peak wildlife conservation body)

IMATA (International Marine Animal Trainers Association)

AQUALITY (zoological water quality association and information group)



**Professional History / Aquarium Related Experience**

**Aquatic Environmental Systems Pty Ltd**

*Managing Director  
&  
Principal Design Engineer*

**2022**

**Coral World International**

Principal design consultant for the Concept and Developed Design of the new Berlin Aquarium life support system and general aquarium specialist works consultant.

**Amalgam Design Lab**

For Construction drawings for all aquarium components of the Gujarat Aquarium in India. Provide husbandry and water quality advice to the developer.

**2020-2021**

**Coral World International**

Principal Design Consultant for the Concept Design of the new Berlin Aquarium life support system and general aquarium specialist works consultant.

**Amalgam Design Lab**

Design Consultant for the Gujarat Aquarium in India and general advice regarding aquarium specialist works and animal husbandry.

**2019-2020**

**Minderoo Foundation Marine Research Centre (Western Australia)**

Provide advise and design assistance regarding all aspects of the project.

**Hong Kong University Sha Tau Kok Aquaculture laboratory**

Provide design and advice for the university's laboratory/pilot aquaculture plant.

**2017-2019**

**Pairi Daiza Zoo (Belgium) Steller Sea Lion Exhibit**

Commissioned by the zoos design team to provide advice generally regarding the exhibits pool, haul-out areas and general environment to provide a suitable facility for exhibiting Steller Sea Lions and in compliance with the EAAM code of practice.

Provide advice regarding pool underwater viewing panel shape, structure and sealing.

Provide advice regarding back of house holding and support areas.

Produce a full design of the exhibit water quality system to provide an excellent low stress environment for the animals and clear water for visitor viewing. Provide advice on the most suitable filtration equipment to be used, produce tender drawings, interview potential contractors, assist the project manager with selecting a contractor, supervise the selected contractor during construction and commissioning.

Provide on-going advice as required.

**Pairi Daiza Zoo (Belgium) Hippopotamus Exhibit**

Commissioned by the zoos design team to design and supervise an upgrade to the existing Hippopotamus Exhibit and holding facility pool filtration system to improve water quality to worlds best practice to enable excellent water clarity and a low stress environment for various fresh water fish to co-inhabit the pool.

Provide advice regarding the most suitable filtration to be used.

Assist the project manager in selecting a suitable contractor, supervise the contractor during construction and commissioning.

Provide on-going advice as required.

**Pairi Daiza Zoo (Belgium) Cold World and New Aquarium Future Development**

Commissioned by the zoos design team assist with the design of a future planned exhibit to be known as "The Cold World". The exhibit will include Polar environment exhibits for Sub Antarctic Penguins, Walrus and Polar Bears.

AES will assist the zoos design team with the general exhibit design, acrylic design and artificial environment design and provide a full design and documentation service for the LSS and water treatment and recovery systems.

AES will work with the zoos design team to undertake concept research and design of a new aquarium and associated features.

**Village Road Shows (Sea World on the Gold Coast Australia)**

Following acceptance of the exhibit design AES was contracted to design, build, install and commission all sea jelly exhibit kreisels and holding and breeding tanks including all LSS, water supply and distribution systems for the facility. After commissioning AES will have an on-going advisory role. (manufacturing of equipment is being undertaken in China in association with Jari and Seven Seas Aquariums)

**Village Road Shows (Sea World on the Gold Coast Australia)**

Co-designer with new large scale sea jelly exhibit in conjunction with Crossley Architects, responsible for general design advice, detailed design & documentation of all Kreisel tanks, Life Support System ("LSS"), exhibit lighting, ocean water supply & central services. Supervision of all Aquarium Specialist Works ("ASW") installation, testing & commissioning & on-going operational advice.

**Mandai Rainforest Safari Park & Penguin Exhibits (Singapore Zoo)**

Consultant to the Mandai design team to provide advice for all aspects of the hydraulics & water filtration of the water bodies of the 8 aviary water bodies.

Consultant to the Mandi design team to provide advice for all aspects of the new Penguin Exhibit including exhibit design, acrylic viewing panels, artificial environment, filtration & temperature control systems.

**Porous Pty Ltd Crocodile Farms Northern Territory and Queensland Australia**

Ongoing commission to provide water quality, environment, husbandry & operational assessment, advice & staff training to the company's 4 crocodile farms in the Australian Northern Territory & Queensland.

**Capital Court OPC Marriott Hotel Aquarium Hong Kong**

Design of all ASW requirements & stocking & husbandry requirements for the 700,000 litre Foyer Aquarium in the new Marriott Hotel at Ocean Park Hong Kong.

**Palm Capitol Mall of Dilmunia Aquarium Bahrain**

ASW consultant & designer for the 750,000-litre aquarium feature being built in the Dilmunia Mall.

**Emaux Water Quality**

Design & advice regarding the manufacture of specialized FRP life support system equipment components for the aquarium & marine park industry. Ongoing association with LSS equipment product development and advice.

**2013 – 2016****Bundbury Dolphin Discovery Centre (BDDC)**

Exhibit co-designer with Earth Story for the exhibit space of the BDDC. Design and documentation of all aquariums, life support systems and husbandry support areas.

**Ocean Park Corporation – Polar Exhibit, Hong Kong**

LSS rectification & upgrade design, construction supervision & commissioning.

**Porous Crocodile Farm Northern Territory Australia**

Filtration plant design, supervision of construction & supervision of commissioning.

**Merlin Entertainment (Sea Life Centres Asia & Australia)**

Conceptual design upgrade of the 2 main Darling Harbour Aquarium LSS.  
Design upgrade concept for the ocean water intake system for the Mooloolaba Aquarium.

**University of Queensland Heron Island Research Station**

Review & report regarding current ocean water system design. Design & documentation of new ocean water supply system & distribution systems & water quality monitoring to wet laboratory. Construction supervision, systems testing and commissioning.

**R & F Properties Hainan Co. Ltd. Lingshui Bay Hainan Island Theme Park China**

Developed design & documentation of all aquarium & marine mammal LSS & ocean water supply treatment & distribution systems for all aquariums, marine mammal facilities, penguin & bird exhibits.

**Cairns Aquarium**

Concept design and developed design of the LSS for the Cairns Aquarium, ASW and exhibit design in consultation with Peddle Thorp Architects and Ellick & Partners Architects.

**2010 – 2013****Merlin Entertainment**

Undertake due diligence inspections & reports in association with Thorburn Consultants prior to Merlin Entertainments purchase of the assets of the Oceanis Aquariums (Kelly Tarltons Under Water World – New Zealand, Mooloolaba Aquarium – Australia, Melbourne Aquarium – Australia, Darling Harbour Aquarium – Australia, Busan Aquarium – Korea, Siam Ocean World Aquarium – Thailand, Shanghai Chang Feng Ocean World Aquarium – China). Provide report re general condition of acrylic viewing panels, LSS, mechanical & electrical services, operations, staffing, husbandry protocols, permits, licences & approvals. Provide opinion as to the value of the infrastructure & probable cost of repair & upgrade as necessary to maintain efficient operation

**R & F Properties Hainan Co. Ltd. Lingshui Bay Hainan Island Theme Park China**

In conjunction with Crossley Architects, Alan Griffith Architects & Village Roadshow Theme Parks provide a fully developed concept design for all the Marine Park aspects of the Lingshui Bay Theme Park – provide environment & species-specific advice regarding appropriate exhibit, animal, technical & interpretation aspects of the marine park.

**Ocean Park Corporation – Sharks Alive Hong Kong**

LSS design, general aquarium design advice, supervising LSS construction & systems commissioning supervision & ongoing operational advice.

**Resorts World Sentosa – Marine Park - Singapore**

ASW Consultant in association with Crossley Architects and in co-operation with DP Architects, responsible for all ASW design & documentation including LSS, acrylic viewing panels ,exhibit design, artificial environment replication, specialist waterproofing, husbandry support areas, curatorial advice, species selection & compatibility advice, tender documentation, tender review, contractors selection, contract administration & supervision, systems commissioning, initial start up & ongoing assistance. Design & manufacturing supervision of specialized ASW & LSS equipment for the project. (project duration 2007 – 2013).

**Zoos Victoria - Australia**

LSS review & upgrade for the Melbourne Zoo Wild Sea's facility LSS, operational & maintenance advice.

**2008-2010****Ocean Park Corporation- Marine Mammal Breeding Facility – Hong Kong**

Design of LSS & general holding pool design advice for holding facility for captive marine mammals including 24 Beluga whales.

**Australian Institute of Marine Science - Open Ocean Simulator – (Qld) Australia**

In association with Thorburn Consultants workshop & report with AIMS management re future direction & design brief imperatives for proposed Open Ocean Simulator water supply, filtration & storage system.

**The Blue Planet, Denmark**

ASW consultant to AAT for all required aspects of aquarium design, detailed design of LSS & specialist components.

**Taronga Zoo Conservation Society - (Sydney) Australia**

Advice re retro fitting waterproofing systems for the seal exhibits.  
Advice re life support & water reclamation system at Taronga Zoo.

**Reef HQ (GBRMPA) – (Qld) Australia**

In conjunction with Thorburn Consultants (NZ). Review all operational practices & all technical systems including LSS. Provide advice & guidance on future direction & planned upgrade of systems & operation.

**Sydney Attractions (Village Roadshow) – NSW Australia**

In association with A.T.T. provide advice regarding upgrading of LSS for the new Dugon Pool at the Darling Harbour Aquarium.

**AAT/Leighton Contractors - Hong Kong**

Revised & upgraded design of LSS for Hong Kong Ocean Park Grand Aquarium project. Design of all life support systems and make up water supply, treatment and distribution systems. Assistance to contractor (AAT) with design & value engineering of building structure & ASW components/construction & commissioning supervision.

**Australia Zoo – (Qld) Australia**

LSS design & installation supervision for Alligator Holding Pool & Salt Water Crocodile Exhibit.

**Melbourne Zoo – (Vic) Australia**

Advice re LSS upgrade for temporary Sea Lion holding facility.

**Redco Pty Ltd – Darwin Crocodile Tourist Facility – (N.T.) Australia**

ASW designer & installation supervisor.  
(LSS, acrylic, artificial environment, exhibit design, husbandry systems, exhibit lighting, curatorial advice) in association with Crossley Architects.

**Ocean Park Corporation Hong Kong – Vet Hospital Facility**

LSS consultant and designer, holding pool designer & LSS installation & commissioning supervisor.

**Brisbane City Council – Wynnum Wading Pool – (Qld) Australia**

Ocean water pumping station & marine filtration system designer & installation supervisor for chemical residual free 6 million litre recreational pool.

**2005 - 2008**

**Qld DPI Australia – Fisheries Research Station**

Design of brood stock holding facility Life Support disinfection system.

**Reed Constructions- (Vic & Syd)) Australia**

Preliminary ASW advice re Melbourne Zoo “Stories from the Sea” project tender.  
Advice re remedial work required for rectification of Sea Lion holding facilities at Taronga Zoo, Sydney.

**Australia Zoo – (Qld) Australia**

LSS consultant & designer & installation supervisor for upgrade of the zoo’s aquatic exhibits & water quality systems.

**AAT/ICM**

Safisa Swim Reef Aquarium (LSS, artificial environment, husbandry systems, design & advice).



**Thorburn Consultants/Oceanis**

LSS detailed design & general exhibit advice re Melbourne Aquarium Penguin Facility.

**Genesis Pty Ltd – Bundaberg Council Turtle Discovery Centre– (Qld) Australia**

ASW & Curatorial consultant (LSS, acrylic, artificial environment, husbandry systems, exhibit lighting, curatorial advice).

**Maunsells/OPC – Hong Kong**

Astounding Asia Exhibit Water System consultant, designer & commissioning engineer.

**Brisbane City Council – various projects – (Qld) Australia**

Water conservation & treatment consultant.  
Water playground & swimming pool design consultant.

**Qld DPI, Cairns, Australia – Fisheries Research Station**

Design & advice re water supply pumping, filtration, treatment & budget estimate.

**AAT/Oceanis – Abu Dhabi**

Abu Dhabi Aquarium - LSS artificial environment & general architectural preliminary advice.

**Underwater World, Mooloolaba/Oceanis – (Qld) Australia**

Design & installation supervision of main aquarium thermal control system.

**2003 - 2005**

**Vilnius Mall Aquarium, Lithuania**

LSS detailed design, construction & commissioning supervision for the ASW contractor (AAT)

**Reed Group (Main Contractor, Taronga Zoo – Australian Coastline Precinct (NSW) Australia**

LSS design consultant for design review & upgrade.

**Tivole Concert Hall Aquarium, Copenhagen**

LSS detailed design & installation supervision. General ASW consultation for the ASW contractor. (AAT)

**Hangdarm Island Turtle Kingdom Aquarium - South Korea**

Concept design & ASW principal consultant in association with AEP Architects

**AAT/Kelly Tarltons Underwater World – New Zealand**

Design & supervision - LSS upgrade for the 2 major aquariums.

**Sea World - Shark Bay Project – (Qld) Australia**

LSS detailed design & aquarium design advice. Manufacture, installation & commissioning of LSS. General advice re environment, acrylic viewing panels & husbandry support systems. Construction, installation, testing and commissioning of all life support systems and make up water treatment systems. On-going advice to Sea World re operations of aquarium and aquarium systems.

**Cairns Rainforest Casino Aquarium – (Qld) Australia**

Design, supply & install acrylic viewing panel for Cairns Rainforest Casino Aquarium.

**1995 - December 2003**

**Shanghai Ocean Aquarium (PRC)**

Principal advisor to designing architect (AEP Architects and Crossley Architects)  
Principal ASW designer. Responsible for design, contract documentation, contract supervision/administration for LSS for all aquariums & penguin exhibit, acrylic viewing panels, specialist waterproofing & husbandry areas. Design & manufacturing supervision of specialist ASW & LSS equipment.

Advice to engineers re building structure & mechanical services.

Production of Operations Manual, supervision of LSS installation, testing and commissioning, review & checking through defects liability period, completion certification, ongoing advice.

**Taronga Zoo - (NSW) Australia**

Asian Elephant & Australian Coastline Precinct

LSS review, costing & advice. General design advice re husbandry & display areas.

**Living Ocean International**

Director – Living Ocean International P/L, advising Board of Directors & shareholders re aquarium industry & systems (1995-1999).

Consultant – selecting & training of ASW engineering, design, husbandry, design & installation staff.

ASW advice re various projects.

Design, development & production of extensive range of aquarium, marine park & aquaculture life support & husbandry equipment.

Marketing & public relations services on behalf of Living Ocean International & Living Ocean International Constructions to prospective clients.

**Hassells Architects - (NSW) Australia**

Concept development plans – Taronga Zoo (Australia) “Australian Coastline & Asian Precinct”.

Consulting engineer - Habitat & Life Support System.

**Dalian Sun-Asia Aquarium (PRC)**

Principal designer - contract supervision & administration – LSS & artificial environment upgrade. System commissioning & staff training.

### **Hong Kong Ocean Park – Pinniped Holding & Quarantine Facility Hong Kong**

Principal LSS designer, construction supervisor & contract administration.  
Supervision of LSS installation, testing and commissioning & staff training.

### **Guangzhou Ocean World Aquarium (PRC)**

Principal adviser to principal designing Architect. (AEP Architects)  
Principal ASW designer.  
Project Manager & Aquarium Specialist Works manufacture and installation supervisor.  
Advice to engineer re building structure & mechanical service.  
Design of specialist ASW & LSS equipment.  
Commissioning of all systems, staff training, supervising introduction of fish, reptiles, sea lions & dolphins to the facility, after system commissioning.  
Training of aquarists & curator.

### **Le Grande Chene Aquarium – New Caledonia**

Principal concept designer - LSS & acrylic viewing panels, general aquarium specialist works  
advice to client & architect.

### **Airport Water Feature, Kuala Lumpur**

Habitat, water systems designer & installation supervisor.

### **Smorgy's Restaurant Aquarium – Geelong (Vic) Australia**

Principal ASW designer, construction supervisor & contract administration.

### **Gondwana Rainforest Sanctuary – Fish & Reptile Pool - (Qld) Australia**

Systems upgrade designer & project manager.

### **Xiamen Underwater World (PRC)**

Design review & advice to developer.

### **Hualien Ocean Park (Taiwan)**

Concept habitat, LSS & exhibit display designer. Preparation to tender documentation stage.

### **Suzhou Tahai Underwater World (PRC)**

Concept design of habitat, LSS, exhibit display & husbandry areas.

### **1989 – 1995**

#### **1995 - Founding member:**

L.O.D.G (Living Ocean Design Group)  
L.O.I (Living Ocean International Pty Ltd)  
LOIC (Living Ocean Constructions Pte Ltd)

### **Undersea World, Cairns (Qld) Australia**

Design of aquarium habitat, aquarium structure, LSS, husbandry support areas, acrylic viewing panels, specialist lighting & exhibitory. Advice to Directors re husbandry, management systems, administration & marketing.

**Underwater World Mooloolaba - Stage III – (Qld) Australia**

Principal ASW designer.  
 Advice re upgrade of display, interpretation & retail/sales areas.  
 Testing & commissioning of all ASW and LSS.

**Underwater World Mooloolaba – Stage II – (Qld) Australia**

Principal advisor to designing architect, responsible for design of habitat, husbandry areas, LSS, acrylic viewing panels, small aquarium structure & specialist lighting.  
 Curator responsible for procurement, permits, temporary holding, transport & introduction of fish, reptiles & sea lions, staff training, animal training & husbandry protocols.  
 Testing & commissioning of all ASW and LSS.

**Underwater World Mooloolaba (Qld) Australia**

Consultant – habitat display exhibitory, acrylic viewing panel installation, Life Support & husbandry support area advice. Management advice re marketing, retail, human resources, cash control security & customer relations.  
 Curator/Manager (1989-1995) – responsible to the Board of Directors for all operations of the aquarium complex.  
 Testing & commissioning of all ASW & LSS.

**WA Dept. of Treasury/Underwater World Sentosa (Singapore)**

ASW consultant for retro design and rectification of unsuitable installations (by others) & systems commissioning. Advice re husbandry, management systems, administration & marketing.  
 Selection of key professional & technical staff.

**Underwater World, Jakarta**

Conceptual design advice to developer.

**1987-1988****Marinescape Corporation, New Zealand**

Consultant – ASW concept design, Darwin Aquarium.  
 Consultant – ASW concept design, Underwater World, Perth.  
 Consultant – conceptual design, Underwater World, Sentosa, Singapore

**Australia's Underwater World - (NSW) Australia**

Principal designer & ASW engineer.  
 LSS, exhibit & habitat designer.  
 ASW supervisor.  
 Exhibit collection manager.  
 Staff training.  
 Advice re retail & sales areas, management systems, administration & marketing.

**1974-1987****Manly Marineland Aquarium (Syd) Australia**

Managing Director & Curator.  
 Responsible for all operations & continuing upgrading of the aquarium complex.

\* Member & technical advisor to Aquarium Society of New South Wales.

**Professional References**

Craig Thorburn	Principal Curator "The Merlin Group"- Aquariums
Suzanne Gendron	Life Science Director – Ocean Park Corp. HKG
Grant Abel	Principal Curator – Ocean Park Corp. HKG
Dr. Paolo Martelli	Chief Veterinary Officer – Ocean Park Corp. HKG
Abraham Wong	Manager, Life Support Systems at Ocean Park Corp. HKG
John West	Head of Technical Services - Taronga Park Zoo, NSW
Trevor Long	Marine Scientist/Manager - Sea World, Qld.
Kevin Tanner	Director – Melbourne Zoo. Vic
Steve Menzies	Curator – Townsville Aquarium, Qld
Barry Bruce	Scientist – CSIRO, Tasmania
Prof. Ove-Hoegh Gulburg	Scientist – University of Queensland
Dr. Clint Chapman	Scientist – University of Queensland
Ass Prof. Kylie Pitt	Scientist – Griffith University
John Greig	Partner – Deloitte Ross Tohmatsu, Qld
Dr Xian Feng Zhang	Scientist - Wuhan Institute of Aquatic Biology (China)
Alan Griffith	Principal - Alan Griffith Architects
Mike Murphy	Principal – Mike Murphy P/L, New Zealand
Wang Wei	Curator – Dalian Sun Asia Aquarium (China)
Sze Wei Lian	Former Manager – Resorts World Sentosa
William Chen	Lutan Pole Aquarium Group (China)
Phil Barlow	Director, Aquatic Treatment Technology
Tom Jones	Reed Constructions Australia P/L
Ian Smith	Qld Dept. of Primary Industries
Cam Crossley	Crossley Architects P/L
Matthew Lawson	Brisbane City Council (City Design)
Brett Somerfeld	Brisbane City Council (City Design)
Robin Devries	Queensland (Cairns) DPI Fisheries
Wes Mannion	Australia Zoo
Darren Beasley	Leighton Asia Manager
Walter Kerr	Projects Manager – OPC HKG
Patrick Too	Director – Resorts World Sentosa
David McLeod	Project Architect – Resorts World Sentosa
Robin Friday	Operations Manager – Resorts World Sentosa
Ms. Jessie Chan	Project Manager – Lia Sun Properties 9 HK Marriott