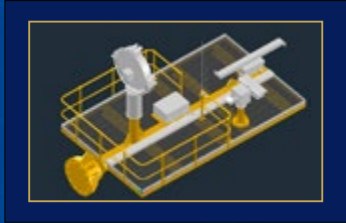




# AUSTRALIAN MARITIME SYSTEMS



# CAPABILITY STATEMENT

*Service Excellence Through Innovation*

# OVERVIEW

**Australian Maritime Systems (AMS) was established with the objective of assisting the providers of maritime services with engineering support to provide high quality innovative and cost effective systems of maritime service delivery.**

AMS has extensive experience in the specialised areas of maritime technology enabling it to efficiently and effectively manage, construct and maintain aids to navigation networks, maritime information systems and associated maritime assets. There are a wide variety of services that AMS can offer including:

- ◆ Vessel Tracking System/Asset Integrity Protection System
- ◆ Design of Maritime Structures integrating them with latest technology
- ◆ Supply, Installation and Maintenance of Navigational Aids, AIS, Buoys, Radar, Sea level Monitoring Systems and Meteorological Ocean Equipment
- ◆ Design and Integration of Remote Power Systems
- ◆ Construction and Maintenance of Maritime Structures
- ◆ Remote Area Logistics
- ◆ Management and Integration of Technology Projects
- ◆ Supply and Servicing of Maritime and Aviation Safety Apparatus
- ◆ Facility and Asset Management (including Remote Monitoring)

**'...we are able to offer the most suitable and economical solution...'**

AMS has extensive experience in the design, installation and maintenance of Electronic Aids with clients both within Australia and abroad. The organisation has completed a number of projects over the years from large and complex Vessel Traffic Systems (VTS) overseas to Meteorological Ocean Sensors for the Australian Maritime Safety Authority (AMSA).

AMS has a multi skilled workforce which includes project managers, engineers, designers, technicians and mechanical tradespeople. In addition AMS has strategic alliances with companies that complement our core business. SGS Weather for example, brings to AMS a wealth of experience as a Meteorological, Hydrological and Oceanographic monitoring system integrator and solution provider.

AMS endeavours to stay abreast of the latest technology and products ensuring that when working with clients we are able to offer the most suitable and economical solution in the marketplace. Our level of expertise, multi-skilled workforce and strategic alliances allow us to provide our clients with turnkey solutions from the design phase through implementation phase and ultimately monitoring and maintenance. AMS specialises in a number of areas including:

- ◆ Asset Integrity Protection System
- ◆ Port VTS installations including Radar integration
- ◆ Differential Global Positioning Systems (DGPS)
- ◆ Meteorological Ocean Sensors
- ◆ Radar Systems
- ◆ Tsunami Systems
- ◆ Automatic Weather Stations
- ◆ Telemetry and Remote Monitoring Systems.
- ◆ Buoy Deployment/Retrieval
- ◆ Radio and Satellite Communication



# FACILITY AND ASSET MANAGEMENT

As the most experienced maritime asset management group in Australia our customers reap the benefits of specialist knowledge and resources.

AMS is able to make informed decisions about investment, service delivery and maintenance for clients in relation to business activities. AMS uses a number of systems in relation to the management of assets including IBM's Maximo Asset Management software, which provides asset lifecycle and maintenance management for all asset types. Given that AMS has facilities situated across Australia, AMS is able to efficiently manage a large range of assets and facilities for clients and has extensive experience in this area. This also gives AMS the ability to offer potential savings by sharing facilities and resources.

'...we are able to efficiently manage a large range of assets and facilities for clients...'



## REMOTE MONITORING

AMS has developed open architecture remote monitoring systems for monitoring remote marine equipment such as:

- ◆ Buoys
- ◆ Solar Powered Beacons
- ◆ Historic Lighthouses
- ◆ Tide Gauge Systems
- ◆ DGPS Sites
- ◆ AIS Systems
- ◆ Radar

AMS Remote Monitoring Systems can monitor:

- ◆ Power Supply inputs
- ◆ Load Currents & Voltages (Multiple Loads)
- ◆ Position (GPS)
- ◆ Lens Rotation Speed
- ◆ Fault Conditions
- ◆ Data Integrity
- ◆ Site Security

Remote Monitoring systems designed by AMS can also be customised to monitor a variety of other parameters. Data can be delivered to customers anywhere in the world over a Web Interface.

AMS has extensive experience in this field, having designed and installed a number of remote monitoring systems for client assets for:

- ◆ Australian Maritime Safety Authority
- ◆ Marine Safety Victoria
- ◆ Port of Fremantle
- ◆ Dampier Port Authority
- ◆ PNG National Maritime Safety Authority
- ◆ Department of Transportation (Navigation), Indonesia

Alarms for navigational aids are monitored at AMS Headquarters in Brisbane. Monitoring provides real time operational status of aids. Alarms are preset to provide instant notification of major variations such as light failure or positional variance. Monitoring can predict failures and allow for preventative maintenance to reduce costs.

# AIDS TO NAVIGATION

Australian Maritime Systems has extensive experience in the design, installation and maintenance of Aids to Navigation. AMS is able to install and maintain a variety of buoys, moorings, beacons and lights which can be monitored remotely using a variety of parameters.

## DESIGN AND CONSULTANCY

AMS personnel have decades of collective experience in the design of Radar, Support Structures, Long and Short Range Visual Signalling, Buoys and Mooring Systems. From concept to delivery, AMS is able to provide a complete design service which is innovative, cost effective, technically sound and suitable for a variety of environments. Our strategic alliances enable us to draw on additional expertise so AMS can provide the client with the best outcome possible.

AMS can also provide high quality consultancy services to clients, to assist in the delivery of goods and services for a range of industries. AMS undertakes a preliminary investigation to discover issues affecting clients and once identified, will assist the client in the implementation of business strategies to deliver successful results. AMS will share our skills and experience and act as a partner throughout the process and not be just another consultant.

**'Data can be delivered via satellite and mobile networks to customers anywhere in the world over a Web Interface.'**

## REMOTE MONITORING

AMS has developed open architecture AtoN (Aid to Navigation) remote monitoring systems that address the needs of Lighthouse Authorities for monitoring their aids to navigation:

- ◆ Buoys
- ◆ Solar Powered Beacons
- ◆ Historic Lighthouses
- ◆ Tide Gauge Systems
- ◆ DGPS Sites
- ◆ Radar and
- ◆ AIS Systems

AMS Remote Monitoring Systems can monitor:

- ◆ Power Supply inputs
- ◆ Load Currents & Voltages (Multiple Loads)
- ◆ Position (GPS)
- ◆ Lens Rotation Speed
- ◆ Fault Conditions
- ◆ Data Integrity and
- ◆ Site Security

Remote Monitoring systems designed by AMS can also be customised to monitor a variety of other parameters. Data can be delivered via satellite and mobile networks to customers anywhere in the world over a Web Interface.

## BUOYS

A spar buoy is a floating lit navigational aid which has an upper tower and subsea hull, floating vertically to provide a precision position for the mariner. It is anchored to a concrete block on the seabed by a small number of large chain links.

A chain buoy consists of a floatation hull, navigation light or mark and generally a tail tube and counterweight for operational stability. Chain buoys are designed to enable handling and servicing from small craft in reasonably protected waters.

## MOORINGS

Mooring systems are designed to hold buoys into position in all conditions including cyclonic. They consist of steel chain, swivels, shackles and a mooring weight on the seabed.

## BEACONS AND LIGHTS

One of AMS's core capabilities is in the area of visual signalling. Lighted aids to navigation are used for key navigational points. Beacons and Lights range from long range systems for the purpose of marking landfalls or coastal passages and channels. Shorter range lights are found for example on harbour and river entrances.



# ACCREDITATION

**AMS has implemented a Business Management System (BMS) to administer its day to day operations. The manual defines AMS' policies, processes and management practices to ensure Quality, Safety of Personnel and Protection of the Environment.**

The system is compliant with the following:

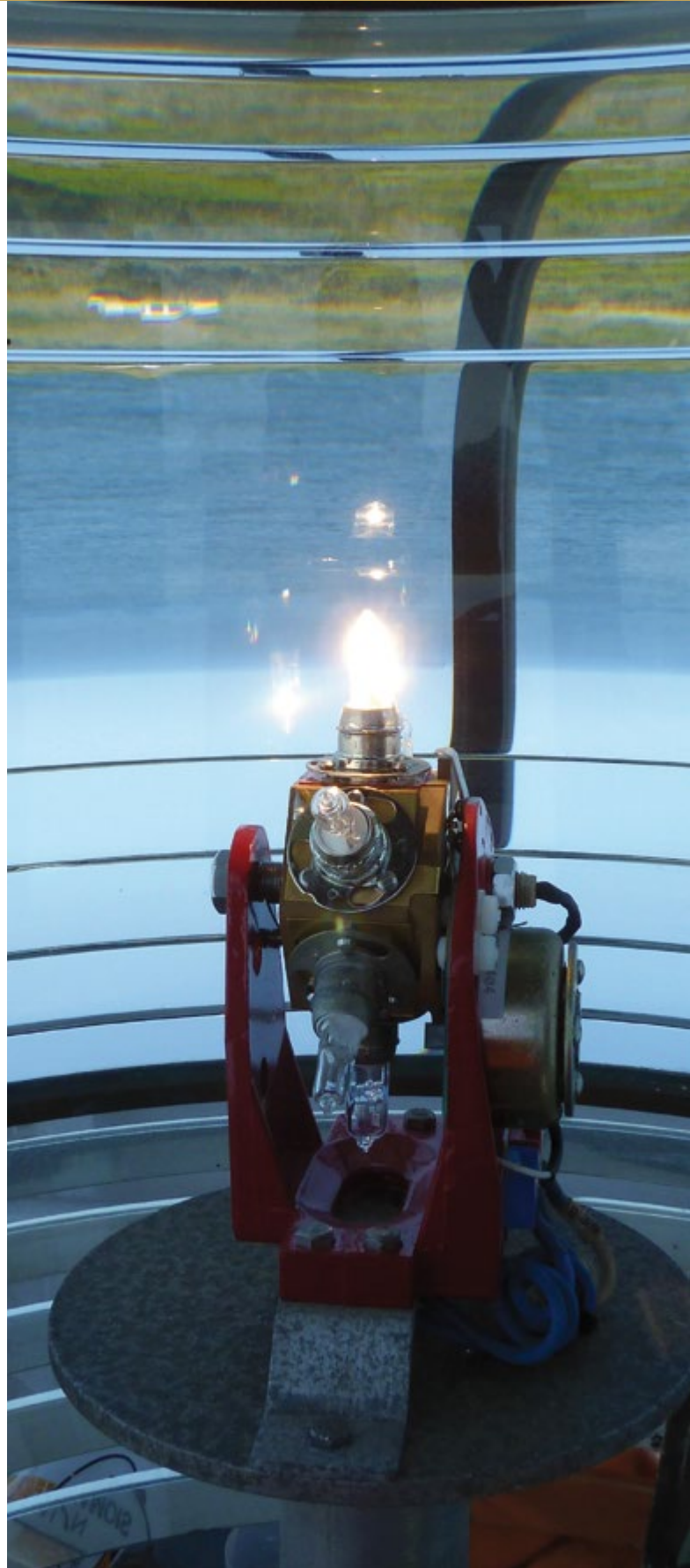
- ◆ ISO 9001:2008 - Quality Management Systems
- ◆ AS/NZS 4801:2001 - Occupational Health & Safety Management Systems
- ◆ OHSAS 18001:2007- Occupational Health & Safety Management Systems
- ◆ ISO 14001:2004 - Environmental Management Systems
- ◆ 'Code Compliant' with the Department of Employment and Workplace Relations' National Code of Practice for the Construction Industry.
- ◆ EASA Part 145 Approved Maintenance Organisation
- ◆ CASA Part 30 Approved Maintenance Organisation

AMS has gained corresponding accreditation for the above standards through Bureau Veritas Quality International (BVQI) or, where applicable, the Australian Federal Government. The BMS system is also compliant with Relevant State & Commonwealth Acts of Parliament, Regulations and Codes of Practice.

AMS is an Industrial Member of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and conforms to IALA policies and guidelines in formulating its designs and recommendations. In addition AMS is a member of the IALA council and plays a role in formulating policies and guidelines to ensure that the movement of vessels are safe, expeditious, cost effective and harmless to the environment.

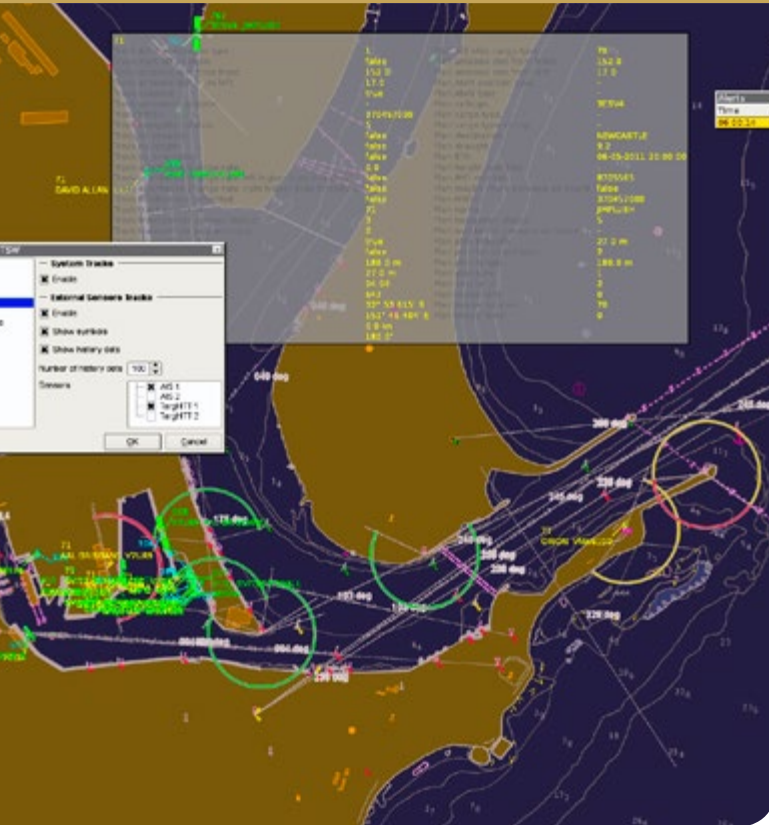
AMS is also a Corporate and Board Member of PIANC Australia. This ensures that AMS is involved in the establishment of best practice and standards in the development of infrastructure and operations of ports and waterways.

**'we help in the establishment  
of best practice and  
standards development  
of infrastructure and  
operations of ports and  
waterways. '**



# SYSTEM INTEGRATION

AMS is a world leader in maritime system integration, evidenced by the large number of highly successful projects it has completed.



‘AMS has extensive experience in the installation of antennas and associated equipment to optimise the coverage of the radio equipment.’

AMS has designed complex systems, integrating a number of technologies including AIS, RADAR, CCTV, VHF, Automatic Weather Stations and other co-operative systems and services. AMS staff have extensive experience in maritime technology and systems integration which enables them to work with clients to achieve desired outcomes.

## RADIO COMMUNICATION

AMS has extensive knowledge of the products available in the market place and can design radio communication systems suited to client specifications. VHF radio equipment is designed to provide a maritime mobile communication service for channel approach, ship movement, SAR (Search and Rescue) coordination and internal port movements. The radio equipment can provide communication between ships and the control centre, including safety and emergency communications.

AMS has extensive experience in the installation of antennas and associated equipment to optimise the coverage of the radio equipment.

AMS has installed Radio Direction Finders dedicated to air and maritime traffic control. These perform simultaneously on multiple frequency channels to take the bearings of multiple aircrafts or ships. The Radio Direction Finder system is software controlled for flexible management of the frequency channels.

AMS has installed and maintains a number of satellite telemetry systems at remote locations along the Australian coastline. Satellite communication is used for remote monitoring of client assets.

## CLOSED CIRCUIT TELEVISION (CCTV)

AMS is experienced in the installation, maintenance and monitoring of CCTV cameras and associated equipment and integrating them into Vessel Traffic and Security Systems.

A CCTV Camera and monitoring system consists of CCTV camera equipment with Web encoder installed at remote sites and CCTV monitor displays and network digital recorders installed in VTS control centres. The TV signal utilises microwave link for communications.

# VESSEL TRAFFIC SYSTEMS (VTS)

**AMS has a high level of experience in regards to maritime navigation systems and are able to significantly enhance navigation and traffic control networks for clients around the world via system integration.**

Vessel Traffic Systems (VTS) are used principally for identification of vessels at sea. This is similar to systems identifying aircraft in air traffic control. One of the emerging components of VTS systems in recent years is Automatic Identification System (AIS). AIS uses transponders which operate in the VHF maritime band and are capable of sending information such as vessel identification, positions, heading, vessel length and hazardous cargo information to other vessels and land-based stations.

The main subsystems for VTS are:

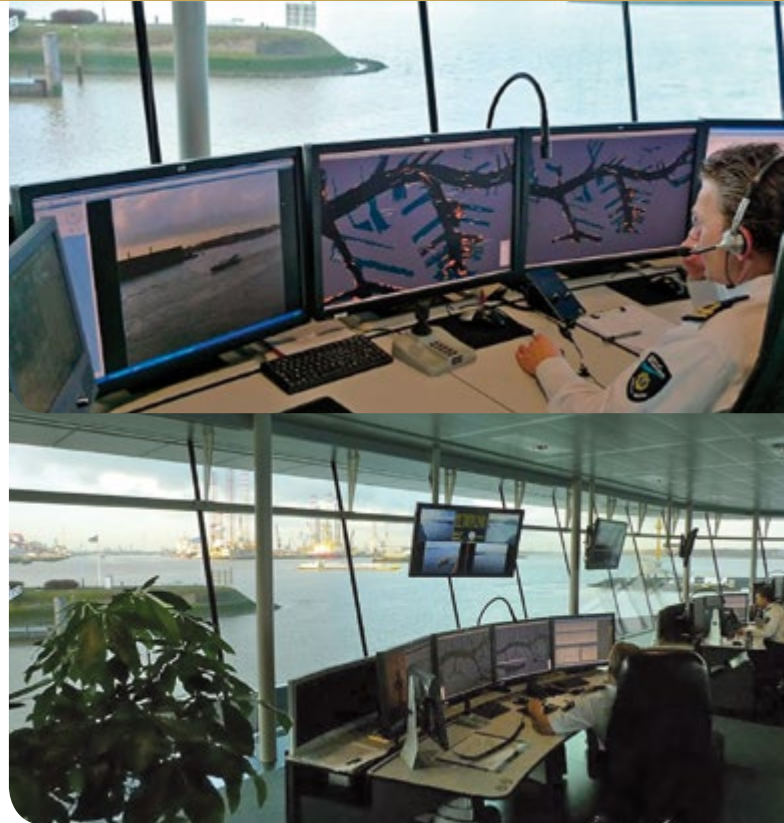
- ◆ Radar sensor
- ◆ VHF/HF radio communication
- ◆ AIS base Station
- ◆ CCTV Unit
- ◆ Automatic Weather Station
- ◆ Microwave Link
- ◆ AIS Displays

AMS, an early champion of AIS, has participated in standards committees and worked with early technology adapters, from the initial planning stage to network implementation. AMS has installed or has planned, approximately 50 AIS transponders on the Australian coast, some integrated with coastal radars, some with AIS display capability and others as direct data feed into remote VTS systems.

AMS installed and maintains the Great Barrier Reef Ship Reporting system (termed REEFREP) that spans the east coast from Torres Strait to Mackay. The network comprises of radar processing facilities, data transmission facilities, AIS Base stations and radar scanner.

In many cases AMS is directly involved in world first activities with AIS including:

- ◆ Installations on remote solar powered sites (e.g. solar powered radar)
- ◆ Remote data access with IP functionality



**'AMS is a global leader  
in the design and  
installation of port VTS.'**



# POWER SYSTEMS

Remote area equipment availability is dependent on highly reliable power supplies. Extensive experience in the integration of power supply components to achieve optimum performance in these applications is a strength of AMS.



AMS uses computer models extensively to accurately determine the best range of power supply options for our client's applications.

AMS designs are carefully matched to client applications and not simply adapted from an off the shelf product range.

AMS experience in the field of remote area power supplies has enabled it to develop a design optimisation process that matches reliability, low maintenance and reasonable cost.

Correct system configuration and component matching assure the customer of a power supply that meets their service delivery specification. Matching target availability to system robustness ensures that a least-cost solution to total system performance is achieved.

## REEFVTS SYSTEM SITES SOLAR POWERED

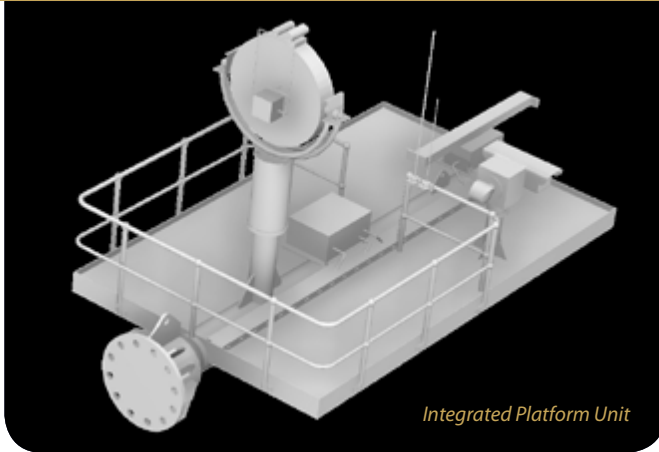
The REEFVTS network comprises five (5) remote sites, with infrastructure including power systems (mains, solar and backup generators), radar processing facilities, data transmission facilities and radar scanner and support structures. This network now provides world's best practice systems including two sites that are totally solar powered.

**'AMS has installed or has planned, approximately 50 AIS transponders on the Australian coast.'**



# OFFSHORE ASSET PROTECTION SYSTEM (OAPS)

AMS is an industry leading solutions provider for vessel traffic and collision and threat avoidance systems.



*Integrated Platform Unit*

AMS has developed an innovative solution for offshore platform protection and security, delivered through the Offshore Asset Protection System (OAPS), an intelligent multi sensor data fusion system that acquires real time data and provides instantaneous 2D or 3D situational awareness for offshore platform operators.

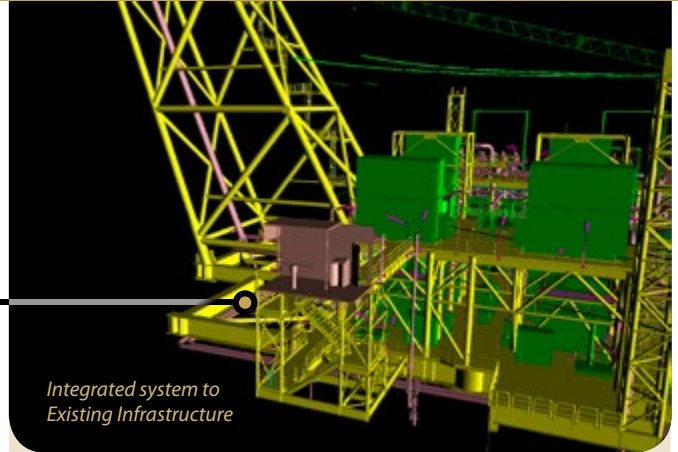
## KEY CONCERNS

- ◆ High value assets
- ◆ Terrorism/hostile threats from pirates
- ◆ Activists
- ◆ Often harsh and hostile environments
- ◆ Increased Shipping Traffic and density
- ◆ Safety and security of personnel
- ◆ Environmental sensitivities
- ◆ High Insurance Premiums

## AMS SOLUTION

- ◆ Turnkey, customisable and fully supported by AMS
- ◆ Proven technologies
- ◆ Scalable and Supported product roadmap
- ◆ Flexible and adaptable
- ◆ Ongoing maintenance support
- ◆ Availability of AMS 24/7 Remote Monitoring

**'Greater Situational Awareness for safe secure Hydrocarbon Operations.'**



*Integrated system to Existing Infrastructure*

## KEY BENEFITS

- ◆ Complete geospatial 2D or 3D picture for early detection of unintentional collision risk and first line detection and deterrence of hostile threats
- ◆ Return Control of Offshore Asset protection to platform operators
- ◆ Greater ability to respond / timeframe and notification to initiate ESD procedures if platform is in danger.
- ◆ Reduced Operating Insurance Costs
- ◆ Zone guarding capabilities to facilitate efficient on field operations whilst maintaining platform security and integrity
- ◆ Seamless real time interface with onshore departments allowing geospatial picture to be viewed in real time
- ◆ Scalable and dynamic system capable of integration with oil spill detection capabilities
- ◆ Remote monitoring capability and centralised controls
- ◆ IALA compliant sensor performance.

## O.A.P.S. SYSTEM OPTIONS

1. Off the shelf
2. System performance
  - a. Basic
  - b. Intermediate
  - c. Advanced
3. Fully managed service
4. Fixed price maintenance/upgrade
5. Oil spill detection capability integration

# MAINTENANCE AND REPAIR

**AMS has had long term contracts for the maintenance and repair of client assets throughout Asia Pacific.**

AMS has had long term contracts for the maintenance of client assets throughout Asia Pacific including:

- ◆ Australian Maritime Safety Authority
- ◆ NSW Waterways
- ◆ Marine Safety Victoria
- ◆ Marine and Safety Tasmania
- ◆ Mermaid Sound Port and Marine Services
- ◆ Fremantle Port Authority
- ◆ PNG National Maritime Safety Authority
- ◆ Solomon Island Government, Ministry of Infrastructure Development

As a Maintenance contractor, AMS has extensive experience in the facility management of AMSA infrastructure including navigational aids and heritage lighthouses.

Each site receives planned maintenance at regular intervals set out in a properly structured maintenance regime. Equipment is tracked through servicing processes, and performance is regularly measured and monitored to ensure that the service to users is maintained at high levels of "availability".

For each service AMS undertakes, evidentiary reports are provided that include photographic evidence of work performed.

As an example of AMS' excellence in the delivery of maintenance service, AMS regularly achieves 100% KPI Rating from its clients.

Our current Sub Contractor Rating with the NSW Government is classified as a Superior Rating.

## HERITAGE REPAIR WORK

Many aids to navigation have historical significance and may be subject to heritage classification. AMS Staff have worked with personnel from the Heritage Commission, State and Federal Government Agencies and other stakeholders to develop Conservation and Management plans for various historically significant assets. AMS personnel understand and appreciate the special nature of heritage classified assets and are conversant with maintenance practices applied to such structures.





## MARITIME STRUCTURES REPAIRS

Structures that support maritime aids to navigation usually represent the single largest investment by an aid to navigation authority. These include buoys towers, piles, composite structures and heritage lighthouses. AMS holds turnkey contracts for the management of specialised marine assets and is able to draw on an extensive vein of experience and knowledge to apply best practice to the inspection, assessment, maintenance and repair of marine assets. AMS staff have also managed a number of improvement projects, many of which involved the design of innovative, technically sound structures that are cost effective, visually appropriate and suitable for the marine environment.

AMS has the capability and experience to undertake a variety of work on maritime structures including:

- ◆ Repair of Steel Reinforced concrete
- ◆ Treatment/Prevention of Corrosion
- ◆ Steel Fabrication and Repair
- ◆ Industrial Painting and Coating
- ◆ Heritage work
- ◆ Cyclone Repairs

## REPAIR OF STEEL REINFORCED CONCRETE AND CORROSION

AMS staff has extensive experience in the repair of spalled concrete in marine environments, having been involved in many projects on marine structures around Australia from buoy towers and piles to composite structures. In addition AMS has won a contract to undertake repairs to a number of structures situated in the Hydrographers Passage. The remediation involves applying a long term strategy to halt the corrosion mechanism in the steel reinforced concrete and the repair of damaged, spalled, cracked or contaminated concrete.

**‘AMS can implement solutions to control corrosion of reinforced steel such as cathodic protection systems.’**



# METEOROLOGICAL SENSORS

AMS has installed six (6) Tsunami Warning stations and completed a number of projects on Automatic Weather stations for the Bureau of Meteorology (BOM).



## TSUNAMI WARNING SYSTEMS

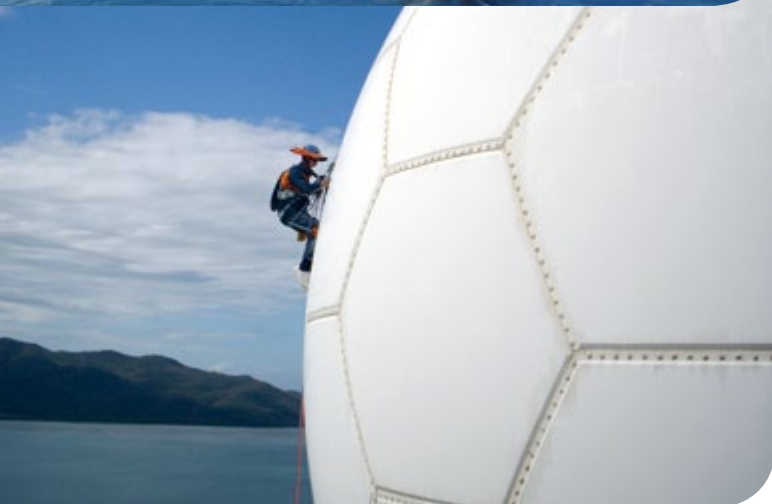
AMS has installed six (6) Tsunami Warning stations for the Bureau of Meteorology (BOM) in Eden, Gold Coast, Lihou, Port Hedland and two (2) in the Solomon Islands. These projects were delivered as a turnkey solution and meet BOM/NTC stringent standards. Data from these sites is used for tide prediction by the NTC and to feed Tsunami warning models for BOM.

## RADAR DOME MAINTENANCE

AMS has performed maintenance on a number of Defence Radomes throughout Australia. Staff are trained in all aspects of safety relating to such work including Working at Heights.

During Radome maintenance AMS conducts a thorough inspection of the Radome including the Panel, Base Ring, Fasteners and Exterior Gel Coat. Work may include:

- ◆ Removing old seal and Recalking Radar Dome
- ◆ Interior Wash Down
- ◆ Interior Floor and Base Rust Treatment
- ◆ Exterior Base Ring Corrosion Treatment



## AUTOMATIC WEATHER STATIONS

AMS has completed a number of projects on Automatic Weather stations for the Bureau of Meteorology (BOM), mostly in Victoria and the Northern Territory with one in Tasmania over the past 10 years. AMS provided full project management for these projects including:

- ◆ Design, engineering and manufacture of equipment housing
- ◆ Turnkey site establishment
- ◆ Data Communications
- ◆ Concrete Foundations with AMS knowledge of the importance and compliance with orientation of the concrete pads and importantly conduit positioning for the different pad specifications

## WAVE RIDER BUOY INSTALLATIONS

AMS has been responsible for the installation and maintenance of buoys from the smallest class right through to the largest Spar buoy in the Southern Hemisphere. AMS personnel have extensive knowledge of the guidelines and standards applying to floating buoys.

The mooring system employed to maintain a floating buoy on station is critical to its effectiveness. Mooring design and maintenance are skills that have been developed over many years within AMS' workforce.

AMS has experience integrating Meteorological Ocean Sensors with Wave Rider Buoys and capturing the information at Shore Based Stations.

# AVIATION AND MARITIME SYSTEMS

AMS is a dynamic aviation survival systems service provider.

AMS has Civil Aviation Safety Authority (CASA) Certificate of Approval (# C574707) as well as European Aviation Safety Agency (EASA) Certificate of Approval (EASA.145.0516) to maintain clean room and workshop facilities (Brisbane and Perth) for the maintenance and service of all life support equipment.

Pursuant to CAR 30A (3), AMS has CASA approval granted for the maintenance of:

- ◆ Inflatable slides
- ◆ Inflatable life rafts
- ◆ Inflatable life jackets
- ◆ Harnesses
- ◆ Cargo restraint equipment
- ◆ Static lines
- ◆ Release latches

## FACILITIES

AMS Head Office is located within the Port of Brisbane, which encompasses Brisbane Domestic and International Airports.

This building has over 2500m<sup>2</sup> of warehouse, storage and workshop space, with over 400m<sup>2</sup> of clean room in a controlled environment complete with a purpose built high pressure gas cylinder service centre for CO<sub>2</sub> and N<sub>2</sub> aviation inflation systems.

## CLIENTS

Servicing major international airlines as well as regional operators AMS can provide leading edge service solutions for aviation life support systems.

## AMS STRATEGIC PARTNERS



'AMS is a premier service centre and distributor for EAM Worldwide.'

# OUR MAJOR PROJECTS

**AMS is a world leader in maritime system integration, new installations, repair and maintenance as demonstrated by the large number of highly successful projects it has completed around the world.**

## OIL AND GAS

- ◆ Radar installations on the GBR – 5 Offshore VTS Radar sites
- ◆ Barrow Island LNG Plant – VTS Radar System
- ◆ Wheatstone LNG Onshore VTS – Supply and installation of Port VTS
- ◆ Wheatstone LNG Offshore VTS – Supply and installation of production platform Collision Avoidance VTS
- ◆ Gorgon LNG – Supply and installation of Port VTS and DGPS
- ◆ Yolla Platform – Supply and installation of an AIS System and AtoN transponder on a gas platform in the Bass Strait
- ◆ Kupe – Installed Asset Integrity Platform Systems on two rigs

## MARITIME PROJECTS – INTERNATIONAL

- ◆ Canada – Supply and installation of Automatic Ship Identification System for the Canadian Coast Guard
- ◆ Turkey – Supply and installation of Automatic Ship Identification System for the Turkish Government
- ◆ Panama – Mobile Surveillance Radar System Panama Government
- ◆ Oman – Coastal AIS for AMNAS
- ◆ India – Remote Control and Automation of Lighthouses
- ◆ Cambodia – Visual and Electronic Navaids in the Mekong River
- ◆ Solomon Islands – Navigational Aids Upgrade for the Solomon Islands Government and the Commission of European Communities Aid Agreement
- ◆ PNG – Installation of AIS Network
- ◆ PNG – Rehabilitation of PNG navaids network under a ADB funded project
- ◆ Galapagos Islands – Installation of AIS Network

## MARITIME PROJECTS – AUSTRALIAN

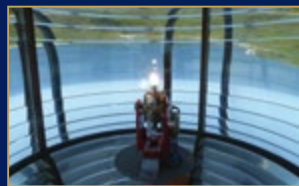
- ◆ Torres Strait Tide Gauge Duplication – AMSA
- ◆ Goods Island Tide Gauge Structure Remediation – AMSA
- ◆ Tsunami Warning Stations at Port Hedland, Gold Coast, Eden, Lihou Reef, two in Solomon Islands – BOM
- ◆ Torres Strait Met-Ocean Sensor Integration – AMSA
- ◆ Navigational Aids Cyclone Repairs
- ◆ Demolition and replacement of Navigational Towers
- ◆ Relocation of the Pine Islet Lighthouse (Timber framed, metal glad)
- ◆ Lantern Room refurbishment projects at Double Is Pt, Sugarloaf Pt, Swan Is and Booby Is
- ◆ Hydrographers Passage – Concrete Pile Structures



# OFFICE LOCATIONS

AMS has offices around the globe to assist international clients.





## AUSTRALIAN MARITIME SYSTEMS

655 MacArthur Ave Central  
Pinkenba QLD 4008, Australia  
PO Box 1430, Eagle Farm QLD 4009

Tel: +61 7 3633 4100  
[info@marsys.com.au](mailto:info@marsys.com.au)  
[www.maritime-system.com](http://www.maritime-system.com)

*Service Excellence Through Innovation*