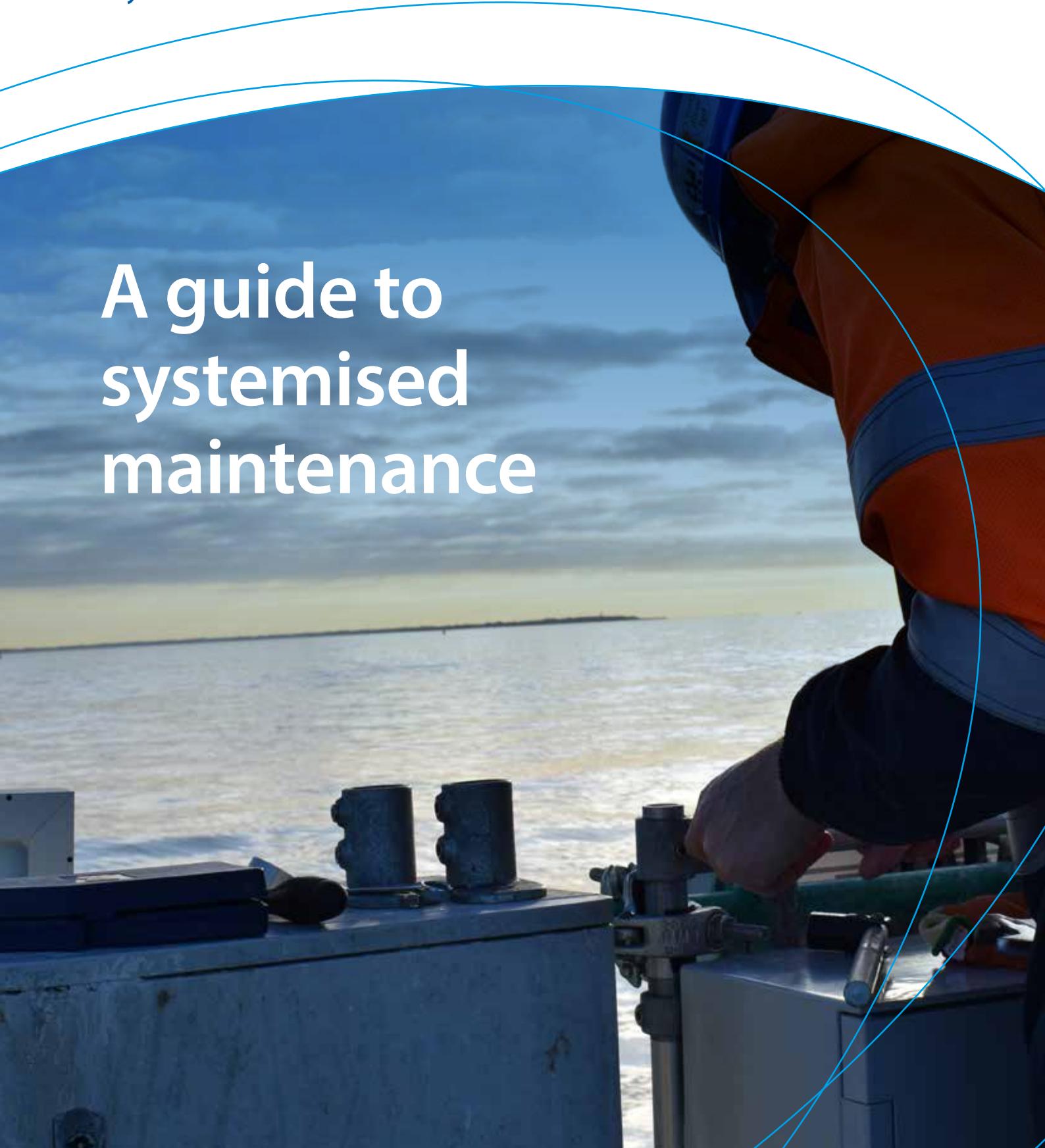# OceanWise

where your data matters

A guide to systemised maintenance

Helping you to get the most out of your environmental monitoring

Why you need a systemised approach to maintenance
and the pitfalls if you don't have a plan

Environmental monitoring is essential to almost all marine and coastal operations, collecting data in real-time, 24 hours a day, transmitting that data and making it available to those who need it most.

The systems that underpin monitoring comprise a variety of hardware and software components, from the sensors that acquire the data through to the applications that display and disseminate it.

All components need to work seamlessly and reliably together, without interruption, to support decision making, enhance health and safety, and improve efficiencies. Storing the data in a historical archive is important to support engineering, environmental and climatological studies.

Using the latest technological advances, **OceanWise** remains at the forefront of upgrading, installing and supporting marine and coastal.

monitoring systems. We believe that by having a planned (i.e systemised) approach you can maximise the lifetime of your instruments (leading to better return on investment) and are less likely to have periods of downtime. Having trust in data is very important – unreliable, incomplete or inaccurate data is almost as bad as no data at all!

Waiting until there is a problem is not an option, as safety and efficiency are paramount, particularly if damage to sensors and data downtime can be avoided.

What do we mean by Systemised Maintenance?

When instrumentation is 'in situ' it is at the mercy of the 'environment' which can impact upon its operation (i.e. exposure to water ingress, wind damage, high or low temperatures, as well as accidental and deliberate damage).

Over time, such exposure can have an effect on the reliability and robustness of any equipment. Exposure to seawater can be particularly destructive, as biofouling becomes prevalent. Living organisms in the water will naturally attach themselves to any hard surface, building up over time leaving instruments coated. Left unmaintained, the instrument can become unreliable and ultimately will fail at some point.

Planning regular maintenance and having set periodic checks, servicing and cleaning will result in avoidance of build-up or damage early and give you a chance to replace parts where required, resulting in extended an lifetime and improved reliability and accuracy.

We are seeing unpredictable and unprecedented environmental conditions due to climate change (higher tides, more frequent storm surges, stronger and more frequent winds, rising sea levels, warmer temperatures etc). So it is more important than ever that we are checking instrumentation to ensure that it doesn't fail when we need it most. The 'fit and forget' approach will leave you open to instrumentation failure or inaccuracy, thus putting operations at risk.

How often should I maintain equipment?

The regularity of maintenance will depend on the equipment and the environment in which it is placed so you need to consider your own unique set up and specific environmental conditions.

For example in warmer waters, biofouling will be greater than in cooler waters. Consider other 'threats', for example, are you at risk of physical damage due to vandalism or theft? Are you able to protect your assets better to avoid damage? Does your system give you status reports and include automated alerts if there's a problem?

Consider the time of year and how seasonal conditions might affect the equipment and whether you need to have more or fewer checks at certain points of the year. For example, consider changes such as wildlife migration, warmer/cooler waters, more/less marine traffic, seasonal weather patterns etc.

Regular maintenance will undoubtedly maximise the lifespan of your equipment meaning an increased return on investment.

What might happen if you do nothing?

- Sensor performance will be degraded, so data quality will reduce over time i.e. the data will become unreliable
- Components are more likely to fail, with a sudden reduction or complete cessation of data retrieval
- System downtime will become more frequent and extended, potentially leading to a total or partial halt in operations
- Unnecessary costs are likely to be incurred, as equipment will need to be repaired or replaced prematurely
- Overall, situational awareness and user confidence will be compromised, leading to increased risk of accidents or incidents.

Our 7 simple steps

1	**Evaluate**	• Think about what systems you have, what instruments you have and how they take their measurements and evaluate where any susceptibility might lie.
2	**Assess the level of risk**	• How critical is the data from your instrument/s to your operations and / or data needs? • What are the potential costs of doing nothing? • Pay particular attention to the potential cost of operational downtime as this is often the most substantial risk.
3	**Read the manuals**	• All equipment should come with a manual and a recommendation for service / maintenance. • Take note of what checks can be done by the owner/operator and what needs to be done by a specialist engineer/ experienced technician. • If you are not sure, contact the manufacturer and make a note of their advice. • Keep a hard and soft copy of any manuals and make sure your team knows where to find them (and any supporting contact numbers/contacts) quickly, should they need to.
4	**Contingency planning**	• Make special note if there is any equipment that needs to be taken away to be specially cleaned/serviced. • Make sure that you have a plan for what will be in place during any cleaning/servicing to maintain your data streams. • If the data is deemed 'critical' you should carry replacements or spares (or have an agreement / contract in place with someone who will stock them). • You should have an emergency plan which includes clear actions to take in the case of a data failure.
5	**Educate**	• Make sure that your team has the knowledge and experience to keep your operations going. • Ensure you always have a number of people within the business who know what to do. • Ensure easy access to any important information / manuals and where data is critical.
6	**Adopt a 'whole system' approach**	• It is not only the equipment that is important, all of the infrastructure relating to the equipment should be considered for maintenance (for example: frames, cabling and power supplies). • The loss or theft of a small part (like a cable) could mean the whole system fails – so consider whether to hold spare parts or keep note where you can get hold of a replacement quickly, should you need to.
7	**Monitor**	• No longer can we rely solely on the past to help us predict the future. • Unpredictability is now the reality and so monitoring your instruments, the data they output as well as being aware of what effects the changing environment might be having on your systems, is very important. • Read any service or maintenance reports particularly the 'recommended actions' and cross reference them with previous years if you can. • How equipment interacts with the environment now might be different (to for example 3 years ago), so adjustments in your planning and scheduling might be required.

By being proactive with maintenance and reactive to conditions and effects, you are much less likely to encounter equipment failure, which means reduced risk and cost savings in the long run.

OceanWise: your one-stop solution
for marine and coastal monitoring

Our service

As part of OceanWise's total solution for marine and coastal monitoring, we provide consultancy and advice on the most appropriate monitoring system for your situation.

Being independent of any given equipment manufacturer, you can be confident that our advice will be impartial. Post installation, we also offer maintenance and servicing, including arranging recalibration of sensors where required, using experienced and certified field engineers.

For testimonials, recent projects and case studies, please visit our website.

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- Consultancy and Advice
- System Design
- System Integration
- System Installation
- Testing and Acceptance
- Service and Maintenance

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