HSEQ Management System

SmartBay Health, Safety, Environmental and Quality Management System

Parkmore Business Park West
Galway, Ireland
SmartBay Ireland Ltd
Introduction

The HSEQ Management System is based on the BSi Occupational Health and Safety, the ISO International Standards Quality and Environmental Management Systems taking into account recommended Offshore Wind and Marine Energy Health and Safety Guidelines, International and National maritime safety and environmental regulations, codes and guidelines.

There is a legal requirement in Ireland for an employer to have a Safety Statement. The SmartBay Health and Safety, Environmental and Quality (HSEQ) Management Systems incorporates the requirements of the Safety Statement.

Safety, Health and Welfare at Work Act S.I. No. 10/2005, and

The SmartBay HSEQ Management System comprises of the following parts:

Tier 1 Manual      Describes the HSEQ Management System, in three Parts A, B & C.
                   Section A: Policies, Administration and Risk Management.
                   Section B: HSEQ Project Management.
                   Section C: Offshore & Shore Based Hazards and Activities.

Tier 2 Manual      Detailed Company Procedures.

Tier 3 Registers   Risk Assessments, Method Statements.

Tier 4 Register    Forms.
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SECTION A – Management System  

SECTION A.1 Scope of the HSEQ Management Systems  
The HSEQ Management system incorporates the Smartbay Safety Management System and applies to all parts of the organisation including: activities at the HQ; the Workshop; the Galway Bay Marine Energy test site and to all personnel and where relevant to all contractors. 

SmartBay Ireland manages and operates a National facility for testing novel equipment and sensors in a licenced test site within Galway Bay. Facilities at the test site include a subsea cabled observatory, floating data buoys, WiFi communications, cardinal marks delineating the site and a future floating sea station is planned. SmartBay personnel are responsible for the day-to-day management of the site. Our personnel support mobilisation, deployments, ongoing operations and maintenance visits, decommissioning of devices, equipment and sensors for our users. All data is transferred to our users via our dedicated web data delivery portal. We also provide data to a client on the South Irish coast using a floating databuoy which is deployed and maintained by SmartBay personnel. 

Exclusions  
There are no exclusions from the applicable International Standards. 

Application  
The Health, Safety, Environment and Quality Management Systems (SMS), incorporating the Safety Statement applies to all parts of the organization, to all personnel and where relevant to all contractors to whom activities or support has been outsourced. 

SECTION A.2 References  
ISO 9000:2015 Vocabulary 
OHSAS 18001:2007 BS Occupational Health and Safety Management Systems -Requirements¹. 
National Standards Authority of Ireland (NSAI). 
IMO SOLAS V Reg 1 and 34. Safety of Life at Sea. 
MARPOL 73/78. 
ISM Code: International Safety Management Systems Code. Mandatory for ships < 500 gross tonnes and usually also mandatory on smaller vessels commercial vessels > 24 metres, at the discretion of the Flag Administration. All vessels are subject to national health & safety laws.


LOLER ACOP L113 (UK HSE).

Report an incident on line:

Construction CDM (Design and Management) UK Regulations 2007.


**ACOPS (Approved Codes of Practice)**

SIMOPS – IMCA M 203 2010.

RenewableUK “Offshore Wind and Marine Energy Health and Safety Guidelines”.

RenewableUK “Wave & Tidal Health & Safety Guide 2014”

Lone Working – UK HSE Leaflet INDG73 as revised.

LOLER ACOP L113 (UK HSE).

CDM UK ACOP L144.

IMCA International Code of Practice for Offshore Diving (IMCA D 014 Rev.2 – February 2014).

IMCA International Code of Practice for Offshore Diving UK Appendix.

IMCA S 14./07 October 2007.

Note¹: OHSAS 18001:2007 applied taking into account draft measures contained in ISO/PC 45001 v ISO/PC 283 17/07/14).
### SECTION A.3  Glossary, Terms and Definitions

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<tr>
<td>ACOP</td>
<td>Approved Code of Practice.</td>
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<td>Audit</td>
<td>Systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are met.</td>
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<td>CDM</td>
<td>Construction, Design and Management regulations.</td>
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<td>Competence</td>
<td>Demonstrated personal attributes and demonstrated ability to apply knowledge and skills.</td>
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<td>Compliance</td>
<td>Procedures, Activities and audit evidence that meets the required level of conformity.</td>
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<tr>
<td>Conformity</td>
<td>Compliance with laws, codes, regulations and documented procedures.</td>
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<td>Context of Organization</td>
<td>Context of the organization – taking into account the activities and culture of the organization.</td>
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<td>Controls</td>
<td>Measures put in place to achieve compliance.</td>
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<td>Corrective Action</td>
<td>Actions necessary to restore the status quo.</td>
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<td>Cospas-Sarsat</td>
<td>Satellite-based search and rescue (SAR) distress alert detection and information distribution system.</td>
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<td>Customer</td>
<td>Test site users including: researchers, device manufacturers, device testers.</td>
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<td>Defect</td>
<td>A physical condition that affects the efficacy of an item of equipment or machine.</td>
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<td>DTTAS (MSO)</td>
<td>Ireland, Department of Transport, Tourism and Sport – Marine Survey Office.</td>
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<td>EASO</td>
<td>“Environmental Assessment of Sites and Organizations” (ISO 14015).</td>
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<td>HSA</td>
<td>Health &amp; Safety Authority (Ireland).</td>
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<td>HSEQ</td>
<td>Health, Safety, Environment and Quality Management System.</td>
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<td>Infrastructure</td>
<td>The basic physical and organizational structures and facilities needed for the operation of the enterprise.</td>
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<td>ISO</td>
<td>International Standards Organization.</td>
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<td>Major non-conformity</td>
<td>An identifiable deviation that poses a serious threat to the safety of personnel or a vessel or to the environment that requires immediate corrective action or a lack of effective and systematic implementation of a requirement of the core ISO Standards or OHSAS specifications or non-compliance with legal requirements.</td>
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<td>MCIB</td>
<td>Ireland – Marine Casualty Investigation Branch (Government agency).</td>
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<td>MRCC - SAR</td>
<td>Marine Rescue Coordination Centre – coordinates Search and Rescue (SAR)</td>
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<td>Nonconformity</td>
<td>An observed situation where objective evidence indicates non-fulfilment of a specified requirement.</td>
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<td>Objectives</td>
<td>The aims or goals, sought after and set to improve performance or meet new criteria.</td>
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<td>OH&amp;S</td>
<td>Occupational Health &amp; Safety (usually associated with a recognized standard).</td>
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<td>OHSAS</td>
<td>Occupational Health &amp; Safety Assessment Series Standard.</td>
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<td><strong>OREI</strong></td>
<td>Offshore Renewable Energy Installation (i.e. wave energy test device).</td>
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<td><strong>PLB</strong></td>
<td>Personal Location Beacon.</td>
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<td><strong>Product</strong></td>
<td>In the context of the HSEQ Management System, “product” can also mean “service”.</td>
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<td><strong>RenewableUK</strong></td>
<td>A leading renewable energy trade association.</td>
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<td><strong>Root Cause Analysis</strong></td>
<td>Systematic analysis of investigation evidence conducted to establish the underlying causes of accident, near-miss, environmental incident or systems non-conformity.</td>
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<td><strong>Progress Pipeline</strong></td>
<td>The pathway or route through the development and funding process.</td>
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<td><strong>IMCA</strong></td>
<td>International Marine Contractors Association.</td>
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<td><strong>SOLAS</strong></td>
<td>Safety of Life at Sea – International Maritime Regulations.</td>
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<td><strong>MARPOL</strong></td>
<td>International Convention for the Prevention of Pollution from Ships.</td>
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<td><strong>STCW</strong></td>
<td>Standards of Training, Certification and Watchkeeping for Seafarers.</td>
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**SECTION A.4: The Organization**

**A.4.1 SmartBay in context**

SmartBay Ireland manages the national marine test facility in Galway Bay for the development of innovative products and services for the global maritime sector. This includes the trial and validation of novel marine sensors, prototype equipment and the collection and dissemination of marine data to national and international users of the facility.

**A.4.1.1 Organogram**

See Forms Library – Organizational Chart Update V11625270215 (NF 060315).

**A.4.2 Needs and Expectations**

SmartBay has determined external and internal issues that are relevant to its purpose and the core objectives that affect its ability to achieve the intended outcomes of its HSEQ Safety Management System.

These issues are broadly interpreted as the “business” activities of SmartBay.

**A.4.2.1 Health, Safety & Welfare needs and expectations**

Interested parties that are relevant to the Health, Safety and Welfare requirements of the HSEQ Management System are known as “stakeholders” and their requirements, implied or otherwise, are managed with due regard to Quality in terms of Safety and the Environment.

Occupational Health, Safety and Welfare legal obligations, apply to all employees. The HSEQ management system incorporates all regulatory requirements in relation to the company Safety Statement.

**A.4.2.2 Environmental requirements**

The interests of parties that are relevant to the environmental requirements of the HSEQ Management System are accounted for in the objectives and expectations of the organization, including meeting legal obligations for the protection of the environment.
A.4.2.3 Quality expectations

Contractual obligations are met by the careful management of customer requirements, planning or risk management and customer satisfaction. Quality management applies equally to the management of compliance with legal requirements and approved codes of practice.

Statutory requirements that can be managed under the Quality management system are incorporated into the HSEQ.

Business expectations are assessed during the project planning process and objectives are set by management, monitored and reviewed to ensure expectations are met.

A.4.3 Scope of SmartBay HSEQ

To eliminate or minimize HSEQ risks associated with the business activities, the protection of stakeholders both internal and external, including the general public and those of the Environment. The HSEQ Management System incorporates the SmartBay Ireland Safety Statement.

A.4.4 HSEQ Management System

A.4.4.1 Purpose

The purpose of the HSEQ is to provide a platform for the Safety Management System incorporating the Safety Statement or SMS.

The SMS is the means by which SmartBay manage their obligations to stakeholders and ensure statutory compliance.

The SMS comprises measures to manage the risks associated with health and safety, protection of the environment and the impacts of Quality aspects on the success of the organization.

A.4.4.2 Explanation and Structure of the HSEQ

SmartBay has established, implemented, maintain and continuously improve a Health, Safety, Environmental and Quality, Management System herein known as the “HSEQ” Integrated Management System.
A.4.5 Implementation of the HSEQ Management System

ISO and OHSAS management systems rely on the principal of continual improvement. This is referred to as the “Plan Do Check Act” principle.

Fig: 4.5.1 The Plan Do Check diagram
The “Plan Do Check” process relies on:

**Fig: 4.5.2 Route to Continuous Improvement**

The SmartBay HSEQ Designated Person is the management representative with responsibility for the implementation of the HSEQ Management System. The organization ensures that all SmartBay personnel are inducted into and familiarized with the HSEQ SMS and that training and support is provided.

The Designated Person ensures that the HSEQ remains up to date and that the provisions of the management systems are implemented across the organization.

The Designated Person has direct access to “top management” SmartBay has undertaken to provide the Designated Person with the necessary support to maintain and continuously improve the HSEQ Management System.

ISO and OHSAS, HSEQ Management Systems are known as “live” systems and are therefore dynamic and rely on a high degree of employee consultation and participation as part of the amendment and continuous improvement cycle described in Figures A.4.6.2 & A.4.6.3.

SmartBay uses Management of Change processes to ensure that changes and implemented effectively.

The documented elements of the HSEQ Management Systems are held on the SmartBay common shared drive.

**A.4.6 Maintenance of HSEQ**

The Safety Management System is underpinned by a “living document”. Notwithstanding this the procedures are described in controlled documents.
It is the responsibility of the “Designated Person” to ensure that the Safety Management System is properly documented, controlled, made readily accessible and that obsolete documents are removed promptly.

Procedures are “process” based, carefully drafted and reviewed by management. Procedures are documented, approved by management, and issued by the Designated Person with a revision number and date.

Method Statements are “risk based”, are devised to cover all physical activities associated with the business where workers may be exposed to danger or hazards. It is very important that Method Statements are well documented and controlled. Method Statements rely on careful critical analysis of the activity processes, their interactions and developed on the basis of Risk Assessment, regulatory requirements and codes of best practice and industry guidelines.

Method Statements are subject to strict document control and must be associated with up to date Risk Assessments and depending on the activity may require a Permit to Work.

All Method Statement are registered and must be readily available for consultation at all times.

A.4.7 Document Control

Documents required by the SmartBay HSEQ Management System are controlled.

The HSEQ Procedures including the forms list and Emergency Response Plan are maintained on the shared hard drive by the administration department and password protected.

HSEQ Forms are available on the SmartBay shared drive for immediate use. Printed copies are not controlled.
SECTION A.5: Leadership

A.5.1 Leadership and commitment

The success of the HSEQ Management System relies on good governance and so top management at SmartBay demonstrate their commitment with respect to the HSEQ Management System by:

1. Ensuring that knowledge of the context in which SmartBay conducts its business and operational activities is taken into account when developing and maintaining the SMS.
2. Ensuring that workplace hazards and environmental factors are systematically identified, risks evaluated and prioritized, and action taken to improve OH&S and Environmental performance where deemed necessary.
3. Ensuring that HSEQ policies are established and compatible with the strategic direction of the organization.
4. Taking OHS and Environmental performance into account in strategic and tactical planning.
5. Ensuring the integration of the HSEQ management system requirements into SmartBay's business processes including activities at project level. *see Note¹*
6. Ensuring that the appropriate financial, human and organizational resources needed to develop, implement, maintain and continually improve the HSEQ management system.
7. Ensuring that SmartBay continues to maintain and develop established processes for consultation and active participation of workers, including Safety Officers and other stakeholders, in the establishment, implementation, maintenance, and continual improvement of the HSEQ management system, including a “just-culture” in the reporting of hazardous occurrences.
8. Communicating the importance of an effective HSEQ management system and the need for compliance within the SMS.
9. Ensuring that design activities take into account customer, legal requirements and best practices with regard to quality, safety and protection of the environment.
10. Ensuring that the HSEQ management system achieves its intended outcomes.
11. Directing, motivating and supporting all personnel to contribute to the effectiveness of the HSEQ management system for all SmartBay functions.
12. Promoting a culture of continual improvement at every level.
13. Supporting other management roles in demonstrating their leadership as it applies to areas of responsibility.
14. Promoting and leading the organizational culture to encourage, resource and support a “learning organization” culture deploying systems thinking methodologies with regard to the HSEQ management system.
15. Ensuring that persons working under the control of SmartBay are aware of their responsibilities with the HSEQ management system and the potential consequences of *(inter alia)*:
   a) Their actions on others in the workplace, and on

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b) The environment, including bio-diversity.

Note¹ - reference to “business” in the HSEQ MS can be interpreted broadly to mean those activities that are core to the purposes of the existence of SmartBay. This does not prejudice the interpretation of the meaning of “application” which commits the organization to implement the SMS across the whole organization at every level.

A.5.1.1 Customer Focus

SmartBay top management shall demonstrate leadership and commitment with respect to “customer focus” by ensuring that:

a) Customer requirements and applicable statutory and regulatory requirements are determined and met.

b) The risks and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined and addressed.

c) The focus on consistently providing products and services that meet customer and applicable statutory and regulatory requirements is maintained.

d) The focus on enhancing customer satisfaction is maintained.

Note: SmartBay manage test sites on behalf of their customers, however they have vicarious responsibility as managing agents as to satisfaction derived by the third party users of the sites, effectively clients of the “principal”.

SmartBay applies the same standards of focus to all stakeholders including Government Agencies.

Example: when a data buoy or submarine test device is secured to the sea bottom SmartBay is required to inform the appropriate lighthouse authority – (eg: Commissioners of Irish Lights for Galway), that the agreed device confirming the type and description of the device, position and lights / marks so that a Notice to Mariners can be issued. It is vital that this work is planned and carried out in a timely, accurate and compliant manner with due deference to Quality on behalf of principals.

A.5.2 HSEQ Policies

SmartBay management is committed to the development of an HSEQ Policy that follows these basic principles (to ensure):

i) A healthy and safe working environment for personnel and stakeholders.

ii) Protection of the environment.

iii) Satisfy applicable legal requirements to which SmartBay subscribes, and

iv) Continuously improve its HSQE performance.

Note: See OHSAS 18001 4.2 & ISO/CD 45001 5.2.

The SmartBay HSEQ Policy:

a) Is appropriate to the SmartBay activities, HSEQ risks and opportunities.

b) Provides a framework for setting and achieving SmartBay objectives.

c) Provides a commitment to satisfy applicable legal and other requirements to which SmartBay subscribes including the company Safety Statement.

d) Includes a commitment to the control of OH&S risks through a hierarchy of control.

e) Includes a commitment to continual improvement of the HSEQ management system to enhance OHSAS, Environmental and Quality.
f) Includes a commitment to worker participation, consultation and as appropriate worker representation.

g) Supports other Policies such as the Drugs and Alcohol Policy.

The HSEQ Policy is:

- Available as documented information.
- Is communicated within the organization to all SmartBay employees and other persons working under the control of the organization.
- Is available to interested parties, as appropriate.
- Is reviewed periodically to ensure that it remains relevant and appropriate.

It is imperative that the HSEQ Policy is an effective integration of the following standards and policies, including *(inter alia)*:

- Environmental Policy (ISO 14001:2004 / 4.2).
- Drugs and Alcohol Policy.

### A.5.3 Organizational roles, responsibilities, accountabilities and authorities

SmartBay management ensure that the responsibilities and authorities for relevant roles are assigned, communicated and understood within the organization.

Management have assigned the responsibility and authority to the following roles:

#### A.5.3.1 General Manager

The SmartBay General Manager is the individual with ultimate responsibility for the activities and results of the business. Safety begins at management level and the overall responsibility for the establishment and maintenance of an effective HSEQ policy for Safety, Health and Welfare at Work, protection of the environment and quality including the Safety Statement rests with the General Manager.

The General Manager has overall responsibility for an effective HSEQ management system and has appointed a Designated Person from within the management team who irrespective of other responsibilities, has the responsibility and authority on a day to day basis.

The General Manager shall:

- Demonstrate a commitment to safety, health and welfare by taking active steps to be aware of the safety record of the business and shall issue any necessary and reasonable directives in the interest of the safety, health and welfare of all employees and third parties.
- Demonstrate a commitment to protection of the Environment.
- Provides leadership and commitment to a sound HSEQ culture throughout the organization.
- The General Manager will endeavour to ensure that there are sufficient funds and facilities available to enable the HSEQ policy and objectives as outlined in this safety statement to be reasonably implemented.
- Review the HSEQ Policy annually and to ensure it is displayed in a prominent place.
- Ensure that HSEQ objectives are set, met and reviewed to ensure continual improvement.
• On a Quarterly basis, appraise the effectiveness of the SmartBay HSEQ Management System.

• Support the outputs of the HSEQ Monthly Review Meeting and provide the necessary resources to meet agreed expectations.

• Ensure that the responsibility for safety, health and welfare is properly assigned, understood and accepted at all levels of the company.

• Assign to a member of the management team responsibility for the implementation of the HSEQ Management System and for reporting on its performance and effectiveness.

• Procure advice and assistance from consultants whenever necessary and take heed, together with remedial action, on any matters brought to his attention in relation to safety, health and welfare.

• Ensure that human, physical and fiscal resources are available at all times to meet the requirements of the safety legislation applicable to the company.

• Ensure that employees under their control and others, including contractors and visitors, are made aware of (and comply with) the company’s health and safety statement and the organization and arrangements for carrying it out.

• Ensure that the HSEQ Management System, incorporating the requirements for a safety statement, is available to all staff within their area of responsibility and appropriate third parties.

• Ensure that all staff are held accountable for their performance in relation to safety, health and welfare and that this performance is evaluated at the time of their annual review.

• Organize the workplace so that operations or work are carried out to a satisfactory safety standard, so as to reduce the risk to persons, equipment and materials so far as is reasonably practical.

• Approve standard operating procedures in writing, where complex operational procedures are involved within the company.

• Have an understanding of Irish health and safety legislation relevant to the company’s operations.

• Have an understanding of Irish environmental legislation relevant to company’s operations.

• Ensure that all operational hazards within the company are addressed; the risks understood and corrective measures are implemented to prevent danger to employees as far as is reasonably practical.

• Take prompt corrective action where unsafe conditions and/or unsafe acts are evident, or identified through accident / incident investigations.

• Ensure that all relevant health, safety, environmental and quality information regarding new methods of accident prevention, new legislative requirements and codes of practice are acted upon in so far as is reasonably practical.

• Discipline any member of staff failing to comply with the HSEQ policy.

• Ensure all reported accidents are investigated within 72 hours and advise on remedial measures to prevent a re-occurrence, and ensure all injured personnel are promptly referred to a Doctor or hospital for treatment if required.

• Report all notifiable accidents and dangerous occurrences to the Irish Health and Safety Board or Marine Casualty Investigation Board in accordance with statutory requirements.
Ensure Safety Standards including the formulation of good housekeeping, maintenance and safety programmes are established and maintained.

Ensure that Risk Assessments are conducted and reviewed for all work activities.

Ensure that all statutory examinations and inspections of equipment are carried out and records maintained.

Ensure that all safety rules, regulations and procedures are kept under review so that they remain applicable to SmartBay.

Ensure that all employees are familiar with emergency procedures, and that appropriate emergency resources are established and maintained.

Ensure that the company complies with all relevant Health and Safety legislation and that employees are aware of all relevant rules, regulations’ codes and standards.


Ensure that thorough and prompt investigations are carried out into all reported accidents and that a completed Accident Report Form is submitted to the appropriate authority, e.g. Client or HSA.

Ensure that SmartBay, through the implementation of the above, strives to achieve continuous improvement.

Note: The mandatory requirement for a Safety Statement is met by its corporation into the HSEQ MS. The General Manager and all other personnel have to have a clear understanding of the overarching responsibility assumed by the General Manager so to a very large extent defining these overall responsibilities is mandatory. You will see that apart from statutory reporting of accidents the rest is delegated from a day to day perspective.

A.5.3.2 HSEQ Designated Person

SmartBay management have appointed the Operations and Technical Manager as the designated member of management who, irrespective of other responsibilities, has responsibility and authority that includes:

a) Ensuring that processes needed for the HSEQ SMS are established, implemented and maintained.
b) Reporting to top management on the performance of the HSEQ Management System and any need for improvement.
c) Ensuring the promotion of awareness of the need to manage risks, control the environmental aspects and awareness of the requirements of customers and stakeholders, and
d) Maintenance of legal compliance.
e) Manages the interface between SmartBay and its contractors and outsourced supplies.
f) Identification of threats and related opportunities leading to improvements.
g) Assists Emergency Response Team as required.

A.5.3.3 Senior Project Manager

Reports to: The General Manager.
Safety Management System

Works with: The Operations and Technical Manager, Senior Software Developers, Project Coordinators, Technicians

The Senior Project Manager, primarily responsible for communicating with the client on matters of customer and stakeholder requirements and project planning and realization of wave energy test site services.

The Senior Project Manager is the deputy Designated Person.

Responsible for:

- Planning and realization of projects including software development.
- Developing Project Handbook.
- Ensuring HSEQ Management System requirements are met in the activities of the project management and software development areas.
- Ensuring HSEQ requirements are taken into account during Project Planning.
- Software Development.
- IT systems back up, anti virus and malware protection.
- Server room and SmartBay IT network.
- Participates in Emergency Response Team as required.
- Site planning utilising GIS.

A.5.3.4 Operations and Technical Manager

Reports to: General Manager.

Works with: Senior Project Manager, Senior Software Developers, Project Coordinators, Technicians Designated Person HSEQ.

Operations and Technical management of test site providing support for the wave energy test site, devices, cabling, maintenance, and onshore infrastructure.

Responsibilities include:

- Technical development of projects.
- Maintenance of infrastructure.
- CDM duty holder where applicable.
- Asset Database.
- Planning service provision.
- Functional responsibility for tendering processes.
- Contributes to Project Handbook.
- Managing operational technical change.
- Ensuring consultation and participation.
- Safe Systems of Work.
- Simultaneous Operations planning and coordination.
- Hazard Identification.
- Risk Assessments.
- Marine environmental protection.
- Legal compliance and implementation of recognized best practices.
- Determination of HSEQ management system controls.
- Method Statements.
- Ensuring that education and training needs are identified and met.
Safety Management System

- Development of emergency contingency plans.
- Support systems for devices.
- Support for Data supplied to Customers.
- Site planning and design.
- Selection of Contractors.
- Marine operations.
- Selection of vessels and marine equipment.
- Deployment of technical resources.
- Operational Control of projects.
- Monitoring and measurement of operational HSEQ performance.
- Management of defects and non-conformities.
- Corrective and preventive actions.
- Member of Emergency Response Team and deputizes for General Manager.
- Participates in HSEQ Quarterly Management Review.
- Participates in HSEQ Monthly Review meetings.

Shares: Document control, records.

A.5.3.5 Senior Software Developers

Report to: Senior Project Manager.

Work with: Operations and Technical Manager, Project managers and coordinators and technicians.

Responsible primarily for software and systems development is primarily related to wave data gathering, processing and parsing for the purposes of meeting the needs of the wave energy developer.

Software is developed to facilitate interfacing with sensors, receiving data and preparing reporting formats that meet requirements to satisfy project realization. Software is also developed for infrastructure support and control purposes which means that from time to time a senior software developer visits and boards data buoys on the marine site.

Senior software developers are required to work within the HSEQ Management System relevant to their work including:

- Understanding “client” needs.
- Planning software development to include (inter alia):
  - Conducting regular reviews.
  - Applying appropriate change processes.
  - Maintains records.
  - Maintains a “back-up” regime for development work and data.
  - Maintains link with client via the Senior Project Manager or directly as appropriate.
  - Testing and amendment prior to release of draft software to “client” for their review.
  - Final review with Senior Project Manager prior to release of working software.
- Complies with all relevant occupational health and safety requirements when planning and visiting sites.
- Reporting any defects and non-conformities.
- Works with Senior Project Manager in respect of IT security and integrity of networks.
- Are familiar with and participates in Emergency Drills and Exercises.
- Assists Emergency Response Team as required.
A.5.3.6  Project Coordinator

Reports to: General Manager.

Works with: Senior Project Manager, Operations and Technical Manager, Administrator.

Other Responsibility: Safety Officer within the HSEQ Management System

- Supports and coordinates resources relating to projects.
- Coordinates HSEQ Management System.
- Controls HSEQ Documentation
- Coordinates HSEQ Certification.
- Safety Officer for QSET site.
- Chairs HSEQ Monthly Review Meeting.
- Coordinates and administers HSEQ Quarterly Management Review Meetings.
- Coordinates fortnightly Project Safety and Operations meetings.
- Administers and coordinates shore based emergency drills and exercises.
- Coordinates COSH Register Information for the QSET site.
- Conducts Environmental Assessments and determines significance of environmental aspects for the QSET site.
- Coordinates and manages company communications and policy.
- Arranges internal and external audits.
- Coordinates and communicates internal “HSEQ Alerts”.
- Coordinates management of non-conformities, corrective and preventive actions.
- Manages office facilities and infrastructure including office systems peripherals.
- Administers human resources.
- Coordinates training and administers training records.
- Assists General Manager with company budgets.
- Relieves administrator.
- Administers insurances.

A.5.3.7  Strategic Funding and Project Coordinator

Reports to: General Manager.

Works with: Senior Projects Manager, Operations and Technical Manager, Project Coordinator and Administrator.

The role of Strategic Funding and Project Coordinator includes but not limited to:

- The preparation of funding proposal submissions.
- Coordination of R&D projects, desk research.
- Administrative support to the central SmartBay team.

Business development aspects include:

- Pursue opportunities concerning potential clients from the Ocean Energy, Aquaculture, Shipping and Security and Oil and Gas sectors.
- Develop collaborations with EU R&D organisations and SME’s to partner in future EU funding initiatives and applications.
- Attend and visit EU meetings and organisations to promote SmartBay facilities and services.
- Assist in the development of the Annual Business Plan in conjunction with the General Manager.

Funding proposal responsibilities include:

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• Developing plans for targeting EU funding opportunities.
• Developing funding proposals in response to funding initiative calls for proposals.
• Developing funding applications and proposals for feasibility study and High Performance Start Up (HPSU) financial support.
• Undertaking market assessments and analysis and play a role in the development of translation projects i.e. SmartBay will develop at least 2 projects designed to deliver new ICT applications within the marine sector each year.
• Monitor and analyse opportunities within EU funding calls and respond as appropriate.

Geographical Information Systems QGIS responsibilities include:
• Assists Senior Project Manager, when required in relation to the spatial planning of various projects as well as spatial planning within the test site using Quantum Geographic Information Systems (QGIS).

HSEQ role and responsibilities include:
• Compliance with HSEQ Management System Requirements, and to assist and participate in Emergency Preparedness activities.
• Assigned duties of Fire Officer for the QSET building.

A.5.3.8 Administrator
Reports to: General Manager.
Works with: Project Coordinators and all personnel.
The responsibilities of the Administrator include:
  • Provision of day to day administrative support for Office personnel on a variable requirement basis.
  • Administers and coordinates company travel arrangements for all staff.
  • Coordinates fortnightly business development meetings.
  • Management and Administration of visitors and visitors logs.
  • Coordinates and administers purchasing and outsource arrangements.
  • Updates Training and Skills matrices.
  • Controls accounts payable.
  • Coordinates and administers company budgets.
  • Assists with administration and recording of non-conformities, corrective and preventive actions.
  • Updates Training and Skills matrices.
  • Assists with project set up using MS Project
  • Relieves Project Coordinator and Administrator.
  • Assists in the administration of document control registers (e.g. Risk Assessments & Permits to Work registers).
  • Assists Emergency Response Team as required.

A.5.3.9 Senior Technician (Team Leader Field)
Reports to: Operations and Technical Manager.
Works with: All personnel.
The Senior Technician is responsible for:
  • HSEQ Management Systems compliance at the workshop and during site visits.

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Safety Management System

- Supporting co-workers.
- Controlling contractors on site.
- Ensuring that a safe, environmentally clean workshop is maintained.
- Ensuring that work is planned taking into account hazard identification, Risk Assessment and determination of necessary controls.
- Conducts Environmental Assessments and coordinates the findings with the Project Coordinator.
- Identifying and reporting any defects or non-conformities.
- Ensures that workshop is compliant in respect of the provision, use and care of work equipment.
- Ensures safety in use and care of lifting and load bearing equipment.
- Carries out periodic thorough examinations of lifting and loading bearing equipment and completes the reports as a competent person.
- Ensures that Personal Protective Equipment is used appropriately.
- Implementing corrective and preventive measures detailed in audit findings, or identified during safety routine inspections.
- Working with P&O Maritime and co-operating in a joint safety culture and working to resolve any safety, environmental, quality or security concerns that either party may have.
- Complies with the building manager’s (P&O Maritime) Emergency Preparedness arrangements including participation in drills and exercises.

A.5.3.10 Technician

Reports to: Operations and Technical Manager.

Works with: Senior Technician and Project Coordinators.

The role of the Technician is to support the workshop activities, conduct and record maintenance. Technicians are required to visit buoys and data devices on the test site, or attend on shorebased sites including the observatory facility.

The Technician’s responsibilities include, but not limited to:

- Acting in compliance with the requirements of the HSEQ Management System.
- Maintaining workshop equipment in compliance with the requirements of the HSEQ Management System including best practice.
- Updating the Asset Database including data relevant to lifting and loading bearing equipment and lifting gear accessories, including mooring gear.
- Ensures that hardcopy records of inspection are maintained securely and that information is transposed in the Asset database.
- Maintaining the workshop COSHH / REACH information and ensuring it is available at the point of use.
- Maintaining HSEQ information and safe systems of work documents including Hazard Identification, Risk Assessments, Method Statements and Permits to Work.
- Recording all defects and non-conformities.
- Ensuring that work equipment is safe to use otherwise is tagged and locked out to prevent use.
• Reports issues relating to Health, Safety, Welfare, the Environment and Quality to the Operations and Technical Manager and additionally pointing out any issues that relate to safety issues identified that relate to the cooperation between SmartBay and P&O Maritime.
• Complies with the building manager’s Emergency Preparedness arrangements including participation in drills and exercises.

A.5.3.11 Fire Officers
Where appropriate, Fire Officers are appointed at each location. In addition to their responsibilities as employees, Fire Officers should:
  • Acquaint themselves with the fire procedures, conditions and location of all firefighting equipment.
  • Make themselves known to staff located in their areas of responsibility and inform them of the method of evacuation and location of assembly points.
  • Keep up to date with a list of personnel for whom they are responsible in the event of a fire.
  • Liaise with the fire brigade and equipment suppliers for advice and instruction, where appropriate.
  • Organize and observe fire drills, where appropriate.
  • Inspect fire equipment and report any loss or damage to the Operations and Technical Manager.
  • Report to the Designated Person any aspect of fire prevention.
  • In the event of a fire, carry out the fire procedures outlined in section A.10 of HSEQ.

Current Fire Officers: Diarmuid O'Connor (QSET building), Shane Burke (SmartBay workshop).

A.5.3.12 First Aiders
At each location, First Aiders are appointed and trained to carry out First Aid when necessary. A list of qualified First Aiders is displayed in all SmartBay premises.

In addition to their responsibilities as employees, First Aiders’ specific responsibilities are:
  • Keep up to date with First Aid practice, and ensure the First Aid Certificate remain valid.
  • Treat personnel, as far as reasonably possible, for cuts, abrasions, falls and shock and make the patient comfortable.
  • Where necessary, contact a doctor or the Ambulance Service.
  • Record all accidents and treatment given.
  • Ensure the First Aid box is replenished and adequately stocked at all times. Note that no drugs or medication, including aspirin, are to be stored in First Aid boxes.

Current First Aiders: Niamh Flavin, Regina McNulty (QSET building), Shane Burke (TSB workshop).

A.5.4 Safety Officer
The Safety Officer’s role is to ensure that the Health & Safety policies of the company are adhered to.

The Safety Officer is appointed by management to oversee the implementation of the health and safety policy irrespective of other duties.

In addition to their responsibilities as employees, the Safety Officer is responsible for the coordination of all matters pertaining to health and safety by adoption of a health and safety management system.
It is a requirement of all staff to co-operate with the Safety Officer in the pursuance of his or her duties and failure to comply with directions given to improve health and safety will be considered gross misconduct and subject to disciplinary action where required.

The role of the Safety Officer is to carry out an effective Risk Assessment on the organization; following these guidelines he or she must be able to:

- Assess and promote Safety Culture.
- Inform all staff of HSEQ Alerts.
- List the type of premises, the tasks being carried out including occasional or non-routine tasks.
- Draw up an inventory of the Hazards to health and safety and the subsequent risk of accidents.
- List those individuals who may be at risk of accidents.
- Quantify the risks of injury, disease and other loss from the hazards so identified.
- Decide how adequate current procedures are to control the risks.
- Decide what should be done to eliminate the risk altogether or substantially reduce it.
- Put control measures in place decided upon.
- Record the findings as part of the review process.
- Monitor the measures.
- Inform and communicate to management and staff.
- Conduct HSEQ Committee Meetings (see Section 6.9.3).
- Attend HSEQ Quarterly Review Meetings.

Current Safety Officers: Niamh Flavin (QSET building); Damien Glynn (SB workshop)

A.5.5 Visitors and Contractors

It is recognized that visitors are more susceptible to occupational hazards due to unfamiliarity of the premises and the activities being carried out within the premises. Therefore, all employees must be aware of the dangers of having visitors in the premises and take all reasonably practicable measures to ensure that no visitor is injured in any way while visiting the company premises. It is the responsibility of all company employees to ensure the safety of visitors on the premises and on sites where the company may be operating. All visitors (not including Contractors) to SmartBay, including persons from the general public, sales people, consultants, inspectors, etc, are bound by the following rules:

- They must register on arrival at SmartBay.
- They should observe the relevant Company Safety Rules and any instructions given by Company personnel who enforce the Company Safety Policy.
- They should not visit or commence work on site until the relevant safety rules and information has been read, understood and accepted.
- Security measures are implemented.
- They should not work on the premises or on site unless covered by their insurance against risk.
- Work carried out by outsourced suppliers and contractors is subject to procedures detailed in B.10.
- They should not enter unauthorised areas where they are not authorised to visit; all unauthorized areas to be sectioned off and signs to be set in place.
In addition, to eliminate or minimize risk to the public, floors and aisles must be kept clear and free from slip-trip-fall hazards – any liquid spillages must be cleared up immediately and trailing cables and excess stock must be avoided where possible.

Contractors or Sub-Contractors will not be allowed onto the premises to carry out work until the Company has checked and is satisfied with their Health and Safety record and insurances.

The sub-contractors must liaise with SmartBay and discuss and agree the safety precautions deemed necessary by either party. All sub-contractors are required to supply specific information and documentation as requested in SmartBay’s Safety Management System. Failure to supply this information will constitute breach of contract and as such, the contract may be terminated.

A.5.6 All Employees

Employees have general statutory obligations under the Safety, Health and Welfare at Work Act, 2005, Chapter 2 Section 14. Employees must:

- Comply with the relevant statutory provisions, as appropriate, and take reasonable care to protect his or her safety, health and welfare and the safety, health and welfare of any other person who may be affected by the employee’s acts or omissions at work.

- Ensure that he or she is not under the influence of an intoxicant to the extent that he or she is in such a state as to endanger his or her own safety, health or welfare at work or that of any other person.

- If reasonably required by his or her employer, submit to any appropriate, reasonable and proportionate tests for intoxicants by, or under the supervision of, a registered medical practitioner who is a competent person, as may be prescribed.

- Co-operate with his or her employer or any other person so far as is necessary to enable his or her employer or any other person to comply with the relevant statutory provisions, as appropriate.

- Not engage in improper conduct or other behaviour that is likely to endanger his or her own safety, health and welfare at work or that of any other person.

- Attend such training and, as appropriate, undergo such assessment as may reasonably be required by his or her employer, or as may be prescribed relating to safety, health and welfare at work or relating to the work carried out by the employee.

- Having regard to his or her training and the instructions given by his or her employer, make correct use of any article or substance provided for use by the employee at work or for the protection of his or her safety, health and welfare at work, including protective clothing or equipment.

- Report to his or her employer or to any other appropriate person, as soon as practicable:
  - Any work being carried on, or likely to be carried on, in a manner which may endanger the safety, health or welfare at work of the employee or that of any other person.
  - Any defect in the place of work, the systems of work, any article or substance which might endanger the safety, health or welfare at work of the employee or that of any other person.
  - Any contravention of the relevant statutory provisions which may endanger the safety, health and welfare at work of the employee or that of any other person, of which he or she is aware.

An employee shall not intentionally, recklessly or without reasonable cause:
• Misuse, damage or interfere with anything provided under the relevant statutory provisions or otherwise for securing the safety, health and welfare of persons at work.
• Place at risk the safety, health or welfare of persons in connection with work activities.

In addition, employees are reminded:
• To only carry out duties they have been trained to perform.
• To keep work areas clean and uncluttered.
• To be careful when moving items.
• To not run.
• That any form of dangerous pranks or unauthorised hazardous activities is totally prohibited on company premises.
SECTION A.6: HSEQ Risk Management and Opportunities

A.6.1 Actions to address risks and opportunities

Options to address risks and opportunities can include: avoiding risk, taking a managed risk to pursue an opportunity, eliminating the risk source, deferring or transferring the risk, changing the likelihood or consequences, sharing the risk or retaining the risk by informed decision.

A.6.1.1 Risk Management

SmartBay subscribes to the principals and practice of Risk Management. The objectives of the HSEQ Management System are to ensure safety ashore and at sea, prevention of human injury or loss of life, and avoidance of damage to the environment and to property.

The HSEQ Management System procedures are based on Safe Systems of Work which include:

- Hazard Operability (HAZOP).
- Hazard Identification.
- Risk Assessment.
- Risk management controls including Permits to Work.
- Method Statements.
- Accident / Dangerous Occurrence Reporting.
- Accident / Dangerous Occurrence Investigation and corrective actions.
- Audits, Inspections and Review.
- Continuous Improvement through Monitoring, Analysis and Preventive Action.
- Ownership by all personnel through participation and consultation.
- Compliance with all regulations, codes and industry guidelines.

The purpose of Risk Management is to reduce, eliminate or transfer the risk by identifying hazards, assessing the consequences, likelihood and determination of controls that reduce eliminate or reduce the risks to acceptable levels for business activities to be carried out safety and without harming the environment.

SmartBay strives to remain as a “learning organization”. This is an organization that facilitates learning and continuously transforms itself to adapt to pressures on the modern business, seeks new methods and subscribes to “continual improvement” in all aspects of safety and protection of the environment.

A.6.1.2 Safe Systems of Work

SmartBay has a legal obligation to provide safe systems of work.

This Safety Management System through its guidance and procedures provides effective safe systems of work comprising (*inter alia*):

- Planning safe work activities.
- Planning safe working environments.
- Conducting “hazard operability studies”.
- Identification of Hazards.
- Exchange of safety information with contractors and or vessel personnel.
- Risk Assessment Processes.
- Permits to Work.
- Method Statements.
• Pre work briefings – “tool box talks”.
• Monitoring safety during activities and tasks.
• “T” Time out for safety – suspending work whilst safety measures are reviewed and enhanced.
• Use of “Safety Observation cards” which are discussed at de-briefings and at HSEQ Monthly Review meetings.

Method Statements shall take into account the relationship between SmartBay personnel and contractors with an exchange of safety information which includes safety inductions.

Safe Systems of Work shall ensure that Method Statements take into account other interested parties and the general public.

A.6.1.3 Occupational Health

The SmartBay HSEQ Management System is intended to protect the bodies and minds of all personnel from illness resulting from the working conditions¹, materials, processes or procedures, relating to activities in the workplace.

A.6.1.4 Welfare

SmartBay provides facilities to maintain the health and well-being of individuals at the workplace. Welfare facilities include washing and sanitation arrangements, provision of drinking water, heating, lighting, accommodation for clothing, seating for work and rest as required, eating and rest rooms. First-aid arrangements are also considered as welfare facilities. These provisions extend as far as is practicable during site visits. Adequate provisions are made for travel, accommodation and subsistence when working away with due regard for adequate rest and recuperation to avoid effects of fatigue.

SmartBay has implemented their policy with respect to inclusivity in the workplace and provision of appropriate welfare facilities for persons with impairment in compliance with National laws.

Persons driving cars and vans shall take a break at least every two hours in accordance with the Company driving for work procedures.

A.6.1.5 Threat identification and opportunities

SmartBay recognizes that there are risk associated with threats and opportunities that need to be addressed.

The organization has identified certain types of business risk, occupational safety hazards and significant environmental aspects that are addressed during the planning and execution of activities.

These threats may be placed into categories and include (inter alia):

a) Injury to persons, employees, contractors or members of the public including first responders.

b) Harm to the environment with consequences to human, animal and plant habitat and the wider biodiversity.

c) Adverse impacts on commercial aspects including stakeholders arising from failures in Quality assurance.

d) Financial risks including legal liabilities and costs arising out of non-compliance, hazardous incidents and

e) Social and economic impacts on personnel and other stakeholders.

<table>
<thead>
<tr>
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These types of threat, their consequences and likelihood are risk managed by implementation of the Safety Management System.

SmartBay analyzes the threats and seeks to develop the opportunities the solutions present to enhance preventive actions leading to overall continual improvement. Threats are therefore seen as learning opportunities.

A.6.1.6 Determination of legal and other requirements

SmartBay has a procedure for the identification and review of legal and other requirements, to ensure operations are carried out in accordance with these legal and other requirements and to evaluate compliance.

SmartBay has registered with the Health & Safety Authority (HSA) for regulatory updates.

SmartBay has a legal register which is reviewed periodically and when planning any development of, or changes to, the HSEQ Management System the relevant regulations, codes and guidelines are applied appropriately.

The organization ensures that significant changes to, or new legislation, is incorporated into training regimes as deemed necessary or for compliance to be effective (Section 8.2 Competences).

SmartBay disseminates relevant applications of statutory regulations, codes and industry or business guidelines as amendments to the HSEQ Management System taking into account any familiarization or training.

Note: OHSAS 18001:2007, 4.3.2, 4.5.2 (ISO DIS 45001).

A.6.1.7 Assessment of OH&S Risks and Environmental Aspects

See also Section 7

SmartBay assesses the threats, risks and opportunities arising from OH&S risks and Environmental Aspects. Section 7 deals with environmental aspects however they are treated similarly and should be considered all at the same time when planning business (work) activities, when developing the HSEQ or making changes.

See Section 6.4 Risk Assessments

A.6.1.8 Planning for change

SmartBay identifies the OH&S hazards and environmental aspects and assesses the risks and opportunities associated with changes in the organization, its processes, or the HSEQ management system.

In the case of planned changes, permanent or temporary, these assessments shall be undertaken before the change is implemented.

Change includes any of the following (inter alia):

- Changes in the organizational structure.
- Changes in strategic plans for the business.
- Tactical changes in business activities.
- Changes to procedures.
- Introduction of new equipment.
- Changes to software.
- Changes to customer requirements.
Changes necessary for regulatory compliance.
- Deferring routine maintenance.
- Temporary changes made including where temporary equipment is installed.
- Where Failure Mode and Effect Analysis (FMEA) is normally required.
- Actions required when SmartBay issue HSEQ Safety Alerts.

Before making any changes the impacts of the intended change should be assessed. Any adverse impacts or effects should be addressed both at the trial stage and reassessed during and after implementation. The impacts may not always be adverse and any opportunities arising for further improvement should be taken and documented with procedures being amended to accommodate the improvements.

It is vital that changes are monitored and reviewed for effectiveness.

SmartBay shall retain appropriate documented records of information on planned changes, including the associated assessments of OH&S risks and Environmental aspects.

See Procedures for detailed flow chart mapping the route to safe and clean implementation of change.

See also Section 9.3 Management of Change

A.6.1.9 Planning to take action

SmartBay develops plans:

a) Actions to address the risks and opportunities, see Sections 6.1.2 and 6.1.4 of this manual.
b) Actions to prepare for, and respond to emergency situations.
c) On the basis of earlier lessons or where expectations might be simulated.
d) How to integrate and implement the relevant actions, including the application of controls, into the HSEQ Management System processes.
e) Actions that lead to an understanding of how defects, incidents and nonconformities occurred, and
f) Actions that lead to corrective and preventive actions.
g) How to evaluate the effectiveness of these actions and respond accordingly.

Actions are planned in order to take into account the effects that one action might have another.

Planned effects should be analyzed to ensure that there are no interactions which may result in conflicts when finally implemented. Similarly any opportunities for further improvement should be taken and actions recorded and reviewed.

SmartBay uses the same techniques when drawing up contingency plans.

Records are kept of the outcomes (outputs) of these plans as documented informed.

A.6.2 OH&S and Environmental Objectives and planning to achieve them

HSEQ objectives are required to maintain and improve the HSEQ Management System and to achieve continual improvement in OH&S and Environmental performance.

See also: 7.2 – Environmental Objectives

A.6.2.1 OH&S Objectives
SmartBay establishes OH&S objectives relevant to functions and levels within the business to maintain and improve the management of OH&S and to go on to achieve continual improvement in OH&S performance.

OH&S objectives should *(inter alia)*:

a) Be consistent with the HSEQ Policy.
b) Take into account applicable legal requirements and other obligations.
c) Take into account the outcome of the assessment of risks and opportunities¹.
d) Are measurable.
e) Shall be reasonable and achievable, at least by stages.
f) Are monitored and progress and or trends analyzed for management review.
g) Are communicated to all personnel and relevant stakeholders.
h) Are updated as appropriate following measurement and evaluation.
i) Are reviewed and reset as appropriate, but not downgraded due to failure.

OH&S Objectives may be set: including, but not limited to:

- Reducing slips and trips in the workplace.
- Implementing new reporting systems or criteria.
- Improve on near miss reporting, levels and quality.
- Reducing lost time injuries, (LTI) – i.e. time lost due to injuries.
- Setting training targets.

Objectives that merely restore the status quo after failure or non-conformance are regarded as corrective actions and are not acceptable as OH&S objectives, however preventive actions may include targets and goals to encourage progress or to provide a means of measurement or performance in the future.

**A.6.2.2 Planning to achieve HSEQ objectives**

SmartBay plans to achieve its HSEQ objectives by determining:

a) What needs to be done.
b) What resources will be required.
c) Who will be responsible.
d) When it needs to be completed.
e) How results will be evaluated, including indicators for monitoring progress toward achievement of measurable environmental outcomes. See Section 17, para 19.1.

SmartBay considers how the actions to achieve the Health, Safety, Environmental and Quality objectives can be integrated into the organization’s normal business processes.

When planning to achieve HSEQ Objectives SmartBay interactive planning processes are used by looking at where we need to be and working back through the existing systems and analyzing the issues whilst involving a high level of individual stakeholder and group participation.

Careful planning is intended to ensure that there are no adverse conflicts that might be detrimental to any other processes linked to the objectives or which may prevent SmartBay achieving the desired outcome.

Progress towards reaching HSEQ objectives is reviewed specifically at HSEQ Quarterly Reviews.

SmartBay keeps records of planning information relevant to setting and achieving HSEQ objectives and of any performance reviews related to these objectives.
A.6.3 Planning of changes

See also Section 9.3 – Management of Change

This section introduces Changes arising out of Threats, Risks and Opportunities, such as changes in customer requirements or methods or effects of changes in legislation, standards or codes and guidelines.

Note: Section 9.3 Management of Change deals with Changes in production / service requirements / provision

The HSEQ Management System is a “living” system and is subject to change so that it provides the necessary management system governance to the business. To this end the SMS provides guidance on how changes may be achieved without causing adverse effects and at the same time open up new potential beneficial opportunities.

Determination of the need for change may arise out of one or more of the following situations:

The following list is not exhaustive and is intended as a guide only:

- Resolution of incidents, learning from findings and taking opportunities that lead to continual improvement.
- Meets needs of the organization.
- Changes in the Scope of activities.
- Changes in materials and processes that influence or change hazards.
- Changes in methods that require new controls to reduce residual risk.
- Changes in environmental aspects and their significances. See Section 7.
- A desire to improve effectiveness of the business.
- Structural changes in the organization including merger.
- Infrastructure changes and or in technology including software.
- Audit failings.
- Customer or stakeholder complaints.
- New legal, statutory or other requirements, in health & safety at work, environmental protection or in codes of practice that benefit from implementation under a quality management system.
- Changes in industry best practices.
- Changes in the ISO International Standards.

In planning for changes SmartBay considers:

a) The purpose of the change and any of its potential consequences.

b) The integrity of the HSEQ Management System.

c) The availability of resources.

d) The allocation or reallocation of responsibilities and authorities.

e) Training needs, including emergency contingencies and preparedness.

SmartBay conducts a documented impact assessment appropriate to the extent of the changes prior to implementation.

Changes are disseminated to relevant parts of the organization appropriately.

All changes to the HSEQ SMS are evaluated to see if further changes are required.

Changes to the HSEQ SMS may mean that internal audit planning and checklists are affected and in some cases where substantial changes are made a new document review by the Certification body may be required prior to an external audit.
SmartBay keep records of changes to the HSEQ SMS and of any impact assessments, reviews and further amendments.

Documented Information is subject to Document Control where amendments and revisions are recorded.

**A.6.4 OH&S Risk Assessment**

**A.6.4.1 Assessing Risk**

SmartBay conducts Risk Assessments (RA) for the purposes of reducing risk to its employees and other interested parties. Risk Assessments are conducted in accordance with detailed procedures. Relevant Risk Assessments are reviewed prior to each activity where risks to human health and safety or damage to the environment are identified. Competency to complete RA is based on expertise that currently exists at all levels, which has been passed on through a mentoring process; they may be completed by any competent member of the staff and approved or authorized by the manager. Further training in this area may be necessary as the safety systems continue to evolve.

Risk Assessments should cross referenced to a Project Number and listed in the Project Handbook.

**A.6.4.2 HAZOP Hazard Operability Study**

SmartBay conducts and updates Hazard Operability studies of test sites and the processes related to projects for the purposes of identifying hazards associated with the overall management and maintenance of the marine sites and their operation. An analysis of the findings provides information useful in the Hazard Identification process (HAZID).

**A.6.4.3 HAZID Hazard Identification**

An essential element of any OH&S Risk Assessment is Hazard Identification or “HAZID” process, identifying hazards which could cause harm. Hazards associated with each step of a work process are identified and transposed into the relevant Risk Assessment. Each hazard is assessed for its consequence, severity, likelihood and existing controls. It is important that other activities do not conflict with the intended work thereby creating additional hazards. Such potential conflicts are also risk assessed and if the additional hazards cannot be eliminated or controlled then alternative means of conducting the work should be found.

Hazards once identified should be clearly documented in the Risk Assessment and recorded.

**A.6.4.4 Risk Assessment Process**

See “Risk Assessment Procedures”.

**A.6.4.5 Permit to Work**

A Permit to Work form must be completed when carrying out tasks at the workshop, offshore on site or any other location where the following tasks are undertaken:

- Welding, burning, grinding or any other hot work.
- Working at Heights.
- Machinery or equipment with High Voltage.
- Any other task identified as needing a permit to work as a result of a RA conducted during work planned offshore, remote sites or in the workshops.
Permit to Work forms are available in the company’s Common network drive. The Operations and Technical Manager will sign off Permit to Work as Authorizing Officer. If he/she is not available then the Permit to Work must be authorized by the Senior Project Manager.

A.6.4.6 Method Statements

The safe systems of work contained in this HSEQ Management System are intended to provide a structured safe work planning process culminating in the “Method Statement”. The Method Statement details in a simple and concise manner that all persons working on the task or work activity can understand. It is more than a work instruction because it contains safe ways of conducting the intended work. The methodology and processes should have been risk assessed and the controls integrated into the Method Statement.

Method Statements are referenced and registered in the “Method Statement Register”.

Method Statements are developed for work activities during the Project Planning process and for any activity where Hazards have been identified.

The Method Statement is documented and is supported by the HAZID, Risk Assessments and Permits to Work where required. The Method Statement forms the basis for the “Tool Box Talk” which is conducted between the persons actively involved, supervisors and any contractors and any other persons who may be engaged in activities that could conflict with the work described in the Method Statement.

As work progresses workers should conduct “dynamic Risk Assessments” to update the controls in case circumstances have changed. Dynamic Risk Assessment is not to be used simply to avoid safety controls or circumvent the Method Statement requirements, but may suggest that further controls are necessary before work is continued. Changing weather conditions or other circumstance arising during the work may require additional controls or the need to stop work for further review.

Before contractors are allowed on site to start work they are required to produce their own Method Statements and those of their sub-contractors for reviewed by SmartBay.

See: Method Statement Register in Forms section.

A.6.4.7 Toolbox Talks or Pre Work Briefings

Toolbox Talks are pre-work activity briefings held to provide an exchange of task and safety information which takes place as close to the workplace as possible. The Toolbox Talk gives those directly concerned with the work activity an opportunity to review the Method Statement and the conditions and particular circumstances surrounding the work.

A.6.4.8 Dynamic Risk Assessment

Dynamic Risk Assessments are carried out to continuously evaluate the implications of changing conditions. It follows the process we use to assess risks crossing the road in everyday life. We have a plan for safe working set out in the Method Statement supported by Risk Assessments and permits to work but we may find that the original circumstances have changed and we need to reassess the risks and uplift the controls to stay safe. When the work is completed the feedback from personnel is used to improve the original controls. This is one reason why SmartBay do not leave a Permit to Work open for more than 24 hours and have procedures for shift changes.

A.6.4.9 Near Miss feedback
Dangerous occurrence incidents often referred to as a “near miss” provide essential information that can be fed back into revised Risk Assessments. If a near miss occurs during a job a dynamic Risk Assessment is conducted and revised controls immediately implemented. It may be necessary to suspend work until the new controls have been implemented. In this event all workers involved should be advised in a safety briefing before work is resumed. A permit to work may need to be cancelled and reissued before work can resume safely.

Near Miss incidents are recorded, investigated and discussed at HSEQ Monthly Review Meetings and at HSEQ Quarterly Review Meetings when the effects of preventive actions have been evaluated.

Research by insurance companies have produced statistical evidence that shows a relationship between the number of “near-miss” incidents (dangerous occurrences), minor accidents and major injuries. The proportions were first identified by Heinrich in 1931 with further studies by Bird, T in 1969 and in later times validated by insurance companies.

SmartBay subscribe to the principles of “behavioural safety” whereby focusing on the understanding of the causes of near miss incidents and improving behavioural practices we can reduce accidents overall.

**Fig: A.6.4.9.1 Accidents / Near Miss ratios (Bird’s Diagram)**

(Bird.T. 1969)

The reporting of near misses is highly important – see A.12.3 “Just Culture” Near Miss reporting.

**A.6.4.10 “STOP WORK” Policy**

SmartBay has a STOP WORK policy which can be invoked by any person who believes themselves or others to be at risk of injury. The same policy shall be used when the risk of damage to property or likelihood of pollution is apparent, and may be signalled to other workers with 5 fingers for “Take 5 (mins) for Safety”

Work is only resumed after the potential hazard is removed or additional controls implemented. In some cases it may be necessary to amend the Permit to Work and Method Statement, and records kept. Risk Assessment(s) may need to be reviewed before work is resumed. Such incidents are referred to HSEQ Monthly Review for discussion.

If work is ceased for a period but not exceeding one day the Permit to Work shall be suspended until work is resumed, or if the work cannot resume safely until the next day then the Permit to Work is cancelled and a new Permit to Work will be required.
A.6.4.11 Fig.1 Safe Systems of Work

Safe Systems of Work
“Safe Work Planning”

- Identify Tasks as part of Project Planning A.9.2
- HAZID Hazard Identification A.6.4.3; A.9.4.10
- HAZOP Hazard Operability A.6.4.2
- Job Safety Analysis Relating tasks to risks and controls
- Risk Assessment A.6.4
- Contractor and Sub-contractor safety information exchange and liaison
- Method Statement A.6.4.6; B.6; B.12.1.6
- Existing and additional controls
- Skills Matrix
- Tool Box Talk
- Emergency Contingency Planning A.10
- Permit to Work A.6.4.5
- Agreement to Proceed
- Investigate “near-miss” incidents and review Risk Assessments A.6.4.9
- Personal Protective Equipment A.6.7
- Review controls taking into account “near-miss” investigation findings A.6.4.9
- “Near Miss” Reporting A.6.4.9; A.12.3
- Dynamic Risk Assessment A.6.4.8
- Check and Review work at daily meeting and at any time circumstance changes
- Clearances of PTW When work fully completed A.6.4.5
- Cancel PTW (if issued) A.6.4.5
- Documents and Records A.8.10; A.8.10.5
- Five year retention

STOP WORK POLICY “Take 5 for Safety” A.6.4.10
A.6.5 REACH / COSHH

SmartBay has a legal duty to ensure that the risk to the safety and health of employees from hazardous chemical agents so far as is reasonably practicable or reduced to a minimum by application of measures contained in the relevant legislation.

**REACH:** is a regulation of the European Union adopted into Irish Government HSA regulations and applies to the chemical industry for the harmonization of chemical safety and environmental standards. It requires all chemicals to be registered centrally with the European Chemicals Agency which includes safety data on the respective products. Where relevant safety data is unavailable this could mean that the chemicals are not registered and should not be supplied or used in the workplace.

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) assessments are subject to continuous review and are particularly important in the workshop at SmartBay. They are available to all personnel and can be accessed in SmartBay’s common network drive. Paper copies of relevant Safety Data Sheets are available at points of use including the workshops.

**COSHH:** is a UK regulation – “Control of Substances Harmful to Health” with 8 basic steps for compliance which are equally applicable to the implementation of any national regulations for the management of health, safety, welfare and environmental where chemical agents are involved i.e.:

1. Assess the risks to health.
2. Decide what precautions are needed.
3. Prevent or adequately control exposure.
4. Ensure that control measures are used and maintained.
5. Monitor the exposure of employees to hazardous substances.
6. Carry out appropriate health surveillance where necessary.
7. Prepare plans and procedures to deal with accidents, incidents and emergencies.
8. Ensure employees are properly informed, trained and supervised.


See SmartBay REACH Procedures.

A.6.6 Maintenance of Plant and Equipment

The purpose of this procedure is to ensure that all SmartBay plant, tools and equipment is maintained for reasons of safety, protection of the environment, legal compliance and to ensure that a quality service is provided to customers.

- SmartBay plant and equipment is maintained internally with records being kept in the “Asset Database” held on Common drive.
- Where maintenance, testing and inspection are outsourced records are also kept in the Asset Database.
Whilst ultimate responsibility for maintenance rests with the General Manager, day to day responsibility for this maintenance rests with the workshop technician reporting to the Operations & Technical Manager.

The Asset Database is used as a means of planning maintenance in which maintenance jobs (tasks) are scheduled.

All scheduled and unscheduled maintenance jobs are recorded against the item in the Asset Database.

All periodic and unscheduled electrical plant, installations and portable appliance inspections and tests are recorded in the Asset Database.

Inspections and tests of compressed air receivers are recorded in the Asset Database.

Calibration of SmartBay tools and equipment and associated records are managed using the Asset Database.

Tools and equipment that cannot be maintained in calibration are defective and shall be tagged, quarantined and their disposal determined with records updated in the Asset Database.

Personnel Protection Equipment inspection, testing and maintenance / service information is held on the Asset Database. Manual records of PPE and pre-use checklists are maintained on form PPE01-2015.06.01.1. See also Section A.6.7

Maintenance of computer / IT equipment including, servers, PCs and laptops, networking equipment and peripherals is managed through the Asset Database.

Lifting equipment is also managed through the Asset Database see Section A.8.12.4

See Section A.9 Operation and maintenance (service and product realization).

Fire detection and alarm systems and fire extinguishers are owned and maintained by a third party however SmartBay has vicarious responsibility for ensuring that this equipment is maintained in good order by exercising due diligence and reporting defects. Fire detection systems tests are carried out by the service agents with records made available to SmartBay who are familiar with their operation. See inductions and familiarization in the SmartBay Employee Handbook.

Use of Forklifts or Welding machines (not portable) in the workshop area requires an authorization procedure involving the Marine Institute Ireland and P&O Maritime. Details of this are found in the workshop; maintenance of this equipment is the responsibility of their owners, but SmartBay personnel should complete a SmartBay incident / accident report which the HSEQ Designated Person can forward or use when reporting to P&O Maritime any defect or incident involving that equipment which may be related to maintenance.

**A.6.7 Personal Protective Equipment**

It is the policy of SmartBay Ireland to provide, free of charge, the required protective equipment and to replace it on presentation of the worn or defective item. A Personal Protective Equipment (PPE) register shall be kept by SmartBay of all PPE issued to its employees. A copy of the register form is attached in Appendix B. PPE means all equipment designed to be worn or held by a person to protect the person from one or more risks. The Designated Person shall identify and procure the appropriate protective equipment for tasks, which cannot be made safe by any other practicable means. This PPE shall comply with all relevant European standards and should bear the CE Mark of EU conformity.
All marine equipment used in the European Union must bear the Marine Equipment Directive (EC.Dir.96/98/EC) conformity mark i.e. a ships steering wheel followed by the ID number of the approving body, and accompanied by the CE mark.

Responsibility for ensuring that the equipment is used properly rests with the manager who will ensure that all employees within their area of responsibility are properly instructed in the maintenance and use of protective clothing and safety equipment at all times.

SmartBay Ireland is committed to providing all its employees the necessary training with respect to the PPE required for use in the workplace. Prior to beginning work in an area that utilizes PPE, all new, re-hired and temporary employees shall receive training by SmartBay. It is the responsibility of the manager to provide safety training specific to the job and the area in which any employee new to the area must work. Information regarding the use of new PPE shall be communicated to all affected employees by the manager prior to introducing the PPE into the area. Appropriate signage will be displayed in areas where wearing specific type of PPE is compulsory.

SmartBay provides the following PPE to staff according to their position and the work being undertaken:

- Safety footwear – boots, shoes, etc.
- Overalls.
- Hand protection – e.g. leather gloves, latex gloves, etc.
- Head protection – e.g. hard hats, welding hat, etc.
- Ear protection – e.g. ear defenders, ear plugs, etc.
- Eye protection – e.g. goggles, welding mask, etc.
- Respiratory protection – dust masks.
- Wet working suits.
- Dry suits.
- High visibility gear.
- Safety harnesses.
- Life jackets.
- Personal Locator Beacons ‘PLB’.

This is not an exhaustive list, and any additional PPE required for out of the ordinary working will be sourced through reputable suppliers.

Responsibility to properly care for the PPE assigned to them lies with each employee. PPE should be clean, not in need of repair, fitting correctly and properly adjusted. Employees who do not have or wear the appropriate PPE should not start the job.

SmartBay are responsible for servicing arrangements, e.g. lifejackets. Wearers should check that the servicing is in date before use and report any defects or non-conformities concerning PPE and other safety equipment.

PPE must not be regarded as a substitute to controlling risks; as a control measure within a safe system of work, it is a last resort under the hierarchy of controls.

The HSEQ Monthly Review provides an opportunity for consultation regarding the control and effective management of PPE.

See HSEQ Form: SCA001-2015.06.01.1 HSEQ Monthly Review Agenda
A.6.8 Technicians working on vessels

A.6.8.1 Vessel selection

Before any operation involving vessels takes place it is compulsory to carry out a pre-cruise inspection to the vessel; a check-list for guidance in this inspection is included in SmartBay Forms. There are a number of objectives to achieve during this inspection, including:

1. Vessel documentation.
2. Safety tour.
3. Induction, emergency briefing including life saving appliances and fire alarms systems.
4. In smaller vessels, i.e. below 15 metres length, check out the VHF, fire extinguishers, EPIRB and SART, where assistance in an emergency might be necessary.
5. Inspection of vessel equipment that may be required for the task and conditions of use.
6. Inspect working conditions.
7. Tool-Box briefing with the boat crew, to cover the intended tasks.
8. Discuss passage plan with the Master/Skipper.

SmartBay will not utilize services of vessels are not fully compliant and up-to-date with their regulatory certifications and applicable maritime standards.

SmartBay requests updated documentation on an annual basis for passenger boats used as workboats and any other class of boat up to 24 metres. Workboat certification is maintained on a spreadsheet supported by scanned/photographed documentation including at least the following (if relevant):

a) Passenger Safety “Licence” Certification under Merchant Shipping (Passenger Boat) Regulations displayed onboard with an expiry date not exceeding 2 years. It is a criminal offence to operate a passenger boat without a licence. Passenger boats must be inspected by an authorized person on behalf of the Irish DTTAS Marine Survey Office.

b) Load Line Certificate, which includes freeboard and intact stability survey requirements.

c) Insurance Certificate in respect of injury, loss or damage to passenger or property on the vessel, or to a person or property not on the vessel, caused by or arising out of the operation of the vessel.

d) Master’s Certificate of Competency.

e) Workboat condition and equipment inspections, pre hire.

Note: Republic of Ireland – however International, EU and National regulations apply elsewhere.

SmartBay conducts periodic Second Party Audits of charter boats to verify compliance.

For vessels in excess of 24 metres, carrying 12 or less passengers the following certification is requested and held on record with periodic checks for continued verification:

f) International Load Line Certificate.

g) Cargo Ship Safety Certificate.

h) Cargo Ship Safety Construction Certificate.

i) Cargo Ship Safety Equipment Certificate.


k) Details of equipment likely to be used for SmartBay work such as deck cranes.

SmartBay, at its own digression, does not audit larger vessels which are subject to the ISM Code, i.e. > 500 gross register tonnage (GRT) or less for which there is a valid Safety Management Certificate.
(SMC) under a voluntary system; however copies of relevant certification are obtained, and a safety tour of inspection conducted and the findings recorded if deemed necessary. Vessel certification is verified on an annual basis.

The SMC is objective evidence of regulatory compliance in larger vessels. See also B.4.4 Passage Planning and B.4.5 Safe Navigation.

See also SB HSEQ Forms – Workboat Checklists (RIBS, Small Commercial Vessels and ships)

Note¹: Ireland, Merchant Shipping Act 1992

A.6.8.2 Working on vessels

The Safe Systems of Work require the Senior Marine Technician to conduct Risk Assessments for each planned operation at sea prior to the development of the specific Method Statement. The Risk Assessment (RA) identifies the marine hazards associated with travelling and working on vessels and the necessary controls to reduce the risk to the lowest practicable level. Risk Assessments may refer to lower level RA pertaining to frequent tasks routinely executed at sea by SmartBay staff and included in the RA and Method Statement documentation. This RA identifies what PPE must be worn and other safety measures must be observed for the entire duration of the operation. This will include, among other measures, compulsory wearing of a life jacket and a Personal Locator Beacon (PLB) and a dry-suit / wet-suit at all times while working at sea or in transit on RIB (see PPE Matrix).

Test and service records of PLB’s are maintained in the Asset Database.

The Master of any vessel is legally responsible for the safety of all onboard his / her ship and has overriding authority over decisions and activities and has the right to suspend the work of SmartBay technicians if in his / her opinion the activity or working conditions present a safety hazard.

However SmartBay personnel working on vessels are generally responsible for their own safety and PPE. However, they must liaise and cooperate with the vessel’s crew in emergency situations such as fire, heavy seas, collision or flooding, or any other situation to which the vessel’s skipper may require their assistance.

The Method Statement shall refer to the vessel Master’s overriding authority which includes terminating or postponing the work activity due to stress of weather, sea conditions or mechanical issues associated with the vessel and its equipment.

The Operations and Technical Manager / Senior Project Manager / Technicians (SmartBay Team Leader) and vessel managers and or the vessel Master shall plan the intended marine activity. See Section A.9.1 “Operations and Maintenance”.

The SmartBay Team Leader and vessel Master shall co-operate in the passage planning of the voyage and work activities during a pre-sailing briefing.

SmartBay personnel are reminded in the Method Statement that ship Masters have overriding authority and all persons on the vessel are required to co-operate with the Master.

SmartBay maintains records of Next of Kin of all employees. Persons assigned to workboats for site visits are asked to confirm their Next of Kin details. Contractors and all visitors shall be asked for their Next of Kin details.

Number of Persons Onboard (POB) confirmed by the SmartBay representative or boat Master and copied to SmartBay prior to departure whilst also copied to the boat operators designated person which is a statutory requirement.
A.6.9 Monitoring HSEQ Activities

A.6.9.1 Safety Officer

See 5.4 Safety Officer – Roles and Responsibilities

A.6.10 Safety Inspections

Location walkabout inspections take place whenever possible, and at least every two months. Inspections are conducted by management or their nominated representative.

Safety inspections include each work and welfare area likely to be associated with normal activities including those currently being planned.

See procedures for Safety Inspections.

Any findings are recorded on the Audits & Inspection Action Log and must be closed out within three months unless otherwise agreed.

A.6.11 HSEQ Employee Participation and Consultation

The HSEQ Designated Person shall invite all available personnel to attend regular monthly HSEQ Monthly Review Meetings which function as Safety Committee Meetings providing for participation, consultation review of HSEQ performance.

See HSEQ Form NMR01.2015.06.01.1 Monthly Review Notice of Meeting and Agenda and Minutes

A.6.11.1 HSEQ Monthly Review Meetings

HSEQ Monthly Review Meetings provide a formal opportunity for personnel to participate in safety planning, give feedback on their working experiences and for the Company to communicate safety information.

HSEQ Monthly Reviews have a formal agenda during which minutes are recorded and updated with follow up responses and feedback.

HSEQ Monthly Review meetings shall be held at least once per 6 weeks throughout the year and are separate from the HSEQ Quarterly Review Meetings see 6.9.4).

HSEQ Monthly Review participation should be representative of the whole workforce and include at least one member of management and be chaired by the General Manager using the HSEQ Monthly Review Agenda Form. Deputies from management may be substituted in the event of absence. Projects and operational and administrative issues are also discussed in an HSEQ context.

Safety Meetings see Information, communication, participation and consultation Section A.8.6

The HSEQ Monthly Review Meetings provide an opportunity for any worker to raise issues concerning health, safety, environment and quality and for them to be discussed in open forum.

HSEQ Monthly Review Meetings have formal agendas which shall be followed. The General Manager, HSEQ Designated Person and relevant departmental manager shall review the HSEQ Monthly Review minutes with action responses documented on the form. Counter responses if required are also recorded. Responses shall be dated and initialled by the lead reviewer / assignee or relevant responder and taken to eventual signing off and action close out.
Safety Management System

SmartBay reviews the effectiveness of the HSEQ Monthly Review at the HSEQ SMS Quarterly Management Review Meeting.

The HSEQ Monthly Review Meetings shall include the following agenda items:

.1 Chairpersons Opening Remarks.
.2 Round Table Discussion: Open discussion relating to all H&S matters for the last period.
.3 Review of previous Actions.
.4 Incidents, Accidents, “Near Miss” and Defect reports – OHSAS, Environmental and Quality.
.5 Environmental Aspects – review of changes in environmental assessment.
.6 Quality Aspects – review any quality issues in the last period.
.7 Audits – Results and Non Conformance Reports, scheduled audits for the next period.
.8 Review of Safety Officers Inspection findings.
.9 Reports from any enforcement agencies.
.10 Review of any new legislation, Approved Codes of Practice and guidance.
.11 Drills and Exercises – Reviews of recent drills and exercises - remedial actions.
.12 Risk Management – Reviews of recent applications of safe systems of work.
.13 Operational Issues – notable operational events, successes, difficulties and opportunities.
.14 HSEQ Alerts & HSEQ publicity and communications.
.15 HSEQ MS Update.
.16 HSEQ - Objectives & Targets – performance and reviews: Key Performance Indicators (KPI’s).
.17 Effectiveness of the HSEQ Safety Management System.
.18 Legislative Changes – Updates for employees.
.20 Customer / Stakeholder feedback – successes, failures and opportunities.
.21 Contractor – Supplier Performance – Reports of any issues noted with the service provided by suppliers.
.22 ISO / OHSAS Standards updates – planning for future updates, opportunities.
.23 “Mini Safety Presentation” by an employee.
.24 Any other matters in open forum.
.25 Chairperson’s closing remarks.
.26 Approximate date of next meeting.

E.g. Five minutes on “Pre use checking your lifejacket”.

See HSEQ Form SCA01-2015.04.01.1 HSEQ Monthly Review Report and Agenda

Records are maintained of HSEQ Monthly Review meetings, minutes and feedback.

A.6.12 HSEQ Quarterly Review Meetings

<table>
<thead>
<tr>
<th>SmartBay</th>
<th>HSEQ Management System</th>
<th>Introduction</th>
<th>V.2015.06.01.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document Title:</td>
<td>SMS Manual – T1</td>
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<td>John Breslin</td>
</tr>
</tbody>
</table>
See also Section A.11.7.1 Management Review

SmartBay holds HSEQ Quarterly Review Meetings with the object of reviewing and assessing the effectiveness of the Safety Management System.

HSEQ Quarterly Review Meetings are intended to meet the requirements for an HSEQ Management Review when the overall effectiveness of the HSEQ Management System is considered by top management.

During this process Key Performance Indicators and the status of Quality, Safety and Environmental aspects are discussed. See Section 19.6 Management Reviews

Other interested parties may be invited to attend the HSEQ Quarterly Review Meetings.

See Form QRA01-2015.03.10.1 HSEQ Quarterly Review Meeting Agenda
SECTION A.7: Environmental Aspects, risks and opportunities

A.7.1 Actions to address Environmental Aspects

Top Management have overall responsibility for ensuring environmental objectives are established and achieved.

A.7.1.1 Identification of Environmental Aspects

SmartBay has identified its Environmental Aspects and determined their significance in terms of their potential impact on the environment and to ensure statutory compliance.

The organization is required to conduct periodic environmental assessments of its sites and operations. Company operating procedures take into account environmental aspects to ensure that appropriate controls and emergency measures are incorporated.

SmartBay makes an environmental assessment as part of project planning and the development of Method Statements.

Personnel are required to report any new or potential environmental aspects and implement controls on a dynamic basis to avoid pollution and to take advantage of any opportunity to reduce existing risk of damage to the environment.

A.7.1.2 Environmental Compliance Obligations

SmartBay shall determine:

a) Identify and have access to the compliance obligations related to its environmental aspects (e.g.: Ire- EPA WEEE or other waste Regulations).

b) Determine how these compliance obligations apply to the organization.

c) Maintain records of documented information and compliance obligations.

A.7.1.3 Risk associated with threats and opportunities for benefit

SmartBay has identified the risks associated with threats as well as any beneficial opportunities that need to be addressed, to:

- Give assurance that the HSEQ Management System can achieve the intended outcome(s).
- Prevent, or reduce undesired effects including the potential for external environmental conditions to affect SmartBay.
- Achieve continual improvement.

A.7.1.4 Documented risk management information

SmartBay keeps records of Risk Assessments taking into account the environmental aspects, threats and opportunities and information shall include (at least):

a) Controls to prevent, reduce or mitigate risk of pollution or adverse effect on the environment.

b) Summary measures taken to comply with legislation and best practice.

c) Any dynamic Risk Assessments carried out to deal with specific threats.

d) Records of contributions to sustainability including technological solutions.

e) Evidence of recycling including statutory records, that meet compliance.

E.g. Safe handling and control of waste materials in compliance with statutory requirements or codes of practice where waste materials are properly disposed of including recycling opportunities.
A.7.1.5 Planning of Actions to Manage Environmental Risks

SmartBay develops and implements plans how to:

a) Eliminate or minimize any environmental threats associated with significant aspects.
b) Take actions to address any legal compliance obligations.

and, integrates these plans into the HSEQ Management System processes, and:

c) Evaluate the effectiveness of these actions. See Note¹.

Note¹: the SmartBay internal audit processes and management review are used to evaluate effectiveness of the environmental risk management actions.

A.7.2 Environmental Objectives and planning to achieve them

Objectives, goals and targets are determined to provide impetus for continual improvement and for achieving aims.

A.7.2.1 Environmental Objectives

SmartBay sets Environmental Objectives at HSEQ Quarterly Review meetings and reviews them at each review meeting.

Environmental Objectives shall take into account the:

a) Organization’s significant environmental aspects and its compliance obligations.
b) The risks associated with threats and beneficial opportunities.

When developing Environmental Objectives, SmartBay shall consider its technological options, financial and business requirements.

Objectives should not be vague or which merely maintain the status quo. They should represent expectation of improvement or achievement.

Environmental objectives shall be consistent with the environmental elements of the HSEQ Policy and be:

c) Measurable (if practicable).
d) Monitored.
e) Communicated.
f) Updated as appropriate.
g) Sustainable – achievable, consistent and progressive.

Examples of Environmental Objectives could include: improved audit performance, reduced numbers of incidents or violations, increased levels of recycling, reductions in environmental aspects or their significance by taking opportunities.

h) SmartBay retains records of information on the environmental objectives which include evidence of trending, progress and achievement.

A.7.2.2 Planning actions to achieve environmental objectives

SmartBay plans to achieve its environmental objectives by determining:

a) What needs to be done.
b) What resources will be required.
c) Who will be responsible.
d) When it needs to be completed.
e) How results will be evaluated, including indicators for monitoring progress toward achievement of measurable environmental outcomes. See Section 17, para 19.1.

SmartBay considers how the actions to achieve the environmental objectives can be integrated into the organization’s normal business processes.

A.7.3  Marine Pollution - Legal Compliance – MARPOL

It is the SmartBay policy that whilst the ship or workboat operators has primary responsibility for legal compliance is also important that SmartBay personnel and contractors support the vessel crews in the implementation of the laws relating to marine pollution. In the case of prosecution SmartBay stands the risk of becoming embled as co-defendants if unknown to the ship / boat crew SmartBay personnel wilfully or negligently caused pollution.

If SmartBay hired a small powerboat without crew (ie: “bareboat charter”) or acquired an owned workboat then the responsibility for implementing National and International laws would fall entirely on the SmartBay. Only competent crews could operate the boat and the boat Master/crew would become personally liable under the law.

A.7.3.1  MARPOL

The IMO MARPOL 73/78 (International Convention for the Prevention of Pollution from Ships, convened in 1973 and modified in 1978). is ratified by most maritime nations including members of the EU. It is written into National Laws including:

Irish “Sea Pollution Act “, 1991 enabled Ireland to ratify MARPOL 73/78.

Other Marine Pollution prevention laws exist to cover pollution of the sea from other than ships.

See footnote at the end of Section 7 for some of the relevant marine pollution laws that potentially apply to SmartBay activities.

Figure: A.7.3.1.1 MARPOL Matrix (approximate guide for SmartBay):

<table>
<thead>
<tr>
<th>MARPOL</th>
<th>Pollutant</th>
<th>Application</th>
<th>SmartBay Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex 1</td>
<td>Oil Pollution</td>
<td>Any ship</td>
<td>Pollution caused by any oil.</td>
</tr>
<tr>
<td>Annex 2</td>
<td>Noxious Liquid in bulk</td>
<td>Not Applicable</td>
<td>Not applicable to SmartBay.</td>
</tr>
<tr>
<td>Annex 3</td>
<td>Harmful substance in packages</td>
<td>Small amounts, limited quantity</td>
<td>Could include paint, chemicals, including cleaning agents not approved for disposal in “grey water”.</td>
</tr>
<tr>
<td>Annex 4</td>
<td>Sewage</td>
<td>Boats or Ships with more than 15 persons or by larger vessel age and tonnage. Could mean a small workboat.</td>
<td>Smaller craft subject to harbour by laws and National Regulations. Best Practice says any boat. Holding tanks should not be emptied within 3 nautical miles of the shore line in open water. Grey water should not contain cooking oil residues or strong cleaning agents.</td>
</tr>
<tr>
<td>Annex 5</td>
<td>Garbage</td>
<td>All ships and boats</td>
<td>Waste packaging, plastics, rags, food waste, paper etc.</td>
</tr>
<tr>
<td>Annex 6</td>
<td>Air Pollution</td>
<td>All ships and boats</td>
<td>MARPOL and EU Laws. Inboard engines and new outboard motors must be 4 stroke unless approved due special design.</td>
</tr>
</tbody>
</table>

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A.7.3.2 Pollution Incident Reporting and Recording

Incidents of pollution should be recorded in the vessels log and reported to Harbour Master or Irish Marine Casualty Investigation Board, if significant or persistent and cannot be immediately eradicated or is not rapidly evaporating or otherwise dissipating.

All pollution reporting should be made in accordance with procedures described in Section 16 – Emergency Preparedness and Response.

A.7.4 Environmental Management of Marine Test Sites

SmatBay personnel visit marine test sites to conduct surveys, check equipment, carry out installations, recoveries and maintenance and other similar activities away from land.

A.7.4.1 Zero Tolerance for Environmental Incidents

The Company has a “zero tolerance” policy regarding pollution at sea

a) Under no circumstances is any garbage including food wastes are to be disposed of in the sea.

b) Engines / outboard motors must be checked for any signs of leaking oil or fuel before leaving the berth or launch point, this is for both safety and environmental reasons.

c) Exhausts from boat engines should not be unusually “smokey” and not contaminated with oil.

d) SmartBay provides detailed HSEQ Procedures for pre departure checks and for monitoring emissions and possible pollution from contaminated cooling water or leaks.

e) Care must be taken when refuelling boats or transferring fuel tanks to ensure environmental threats and safety hazards are not created.

Any defects or adverse observations relating to the safe and clean operation of powerboats / workboats shall be reported to the “skipper” or person in charge of the boat and details entered into the SmartBay work log as a record and the skipper is expected to carry out immediate corrective action to prevent pollution or a safety threat developing.

See detailed specific Procedures for management of powerboats for both owned, self drive and “crewed” charters.

A.7.4.2 Disposal of Garbage relating to people and work activities

Garbage is identified as an environmental aspect and is assessed for its significance in terms of the items or types of materials that make up waste materials for disposal including recycling.

The SmartBay policy is that ALL garbage irrespective of whether or not it is labelled biodegradable shall be returned to the quayside / slipway / mother ship for sorting and proper disposal in a port waste reception facility. This usually comprises emptying the rubbish into the skips managed by the Port Authority for the purpose.

Work related garbage could include (inter alia):
a) Packaging, oily rags, cabling off cuts, fibre optic wastes, plastics and damaged components, old mooring wires / ropes and gas or engine emissions.

b) Used solvent and cleaning agent containers.

Plastic sheeting is particularly dangerous to sea life and vessels. It can get sucked into cooling water inlets and block systems causing engines to overheat and break down. Ropes and sheets may also get wound around ships / boat propellers causing shaft and gear box damage and propulsion failure and where the risk can remain indefinitely.

Such materials alternatively end up on beaches and cause unsightly pollution. Apart from the impact on tourism, swimmers, fish and fishing boats, sea birds and aquatic mammals there can be huge financial and criminal penalties if traced back to our vessels / activities.

See HSEQ Form EAO01-2015.05.15.1 Environmental Assessment Form & Guidance.

A.7.4.3 Disposal of Lithium and other Batteries

SmartBay has developed detailed procedures for the correct disposal of lithium and other batteries which include ways of dealing with batteries removed from data buoys whilst in situ afloat. Batteries should be transferred, transported out to a buoy / marine device and exchanged only when a Risk Assessment and Method Statement has been developed and where participants associated with the actual work have an input.

Batteries shall be brought ashore carefully and transported to the workshops whilst handled in accordance with the REACH / COSHH Regulations outlined in this Manual and again in Procedures and as applied to Method Statement and Risk Assessments.

Battery Disposal procedures are found in the HSEQ SMS Level 2.

A.7.5 Marine Pollution Legislation

See also Legal Register Tier One ANNEX 2.

Principal legislation includes (inter alia):

Ireland S.I. 372./2012 – Sea Pollution (Prevention of Pollution by Garbage from Ships) regulations 2012

MARPOL 73/78 applies to a number of environmental aspects relevant, not only to larger vessels but also, to small commercial craft such RIBs / Inflatables dories and displacement workboats typical of the types deployed by SmartBay. See definitions respective annexes.

Irish “Sea Pollution Act “, 1991 enabled Ireland to ratify MARPOL 73/78.

EU Marine Equipment Directive (MED) 96/98/EC as amended by 2003/44/EC (Marine equipment assessed for safe and clean use aboard EU registered vessels).


A.7.6 HSEQ Quarterly Review Meetings

See also Section 19.6

SmartBay holds HSEQ Quarterly Review Meetings with the object of reviewing and assessing the effectiveness of the Safety Management System.
During this process Key Performance Indicators and the status of Quality, Safety and Environmental aspects are discussed. See Section 19.6 Management Reviews

See Form QRA01-2015.03.10.1 HSEQ Quarterly Review Meeting Agenda.
SECTION A.8: Resources

A.8.1 Resources

A.8.1.1 General

SmartBay provides the resources needed for the establishment, implementation, maintenance and continual improvement of the HSEQ Management System.

SmartBay management continuously review the resource requirement. In some cases it is necessary for management to determine specific needs for a particular business activity.

Personal protective equipment, safety and environmental devices and supplies are also considered as resources.

In determining provision of resource SmartBay considers:

a) The capabilities of, and constraints on, existing internal resources.

b) What needs to be obtained from external providers.

Note: See also Purchasing Information.

A.8.2 People – Human Resources

In any organization people are their most valuable asset. The training, education and personal development of human resource is vital to success of the business and its management systems.

SmartBay ensures that all personnel are familiarized and training in the contents and use of the HSEQ Management System to ensure its compliant implementation.

It is essential that personnel participate in the development of management systems and are consulted in the planning of projects, commissioning, operations and maintenance and decommissioning activities.

Management consult with the workforce and encourage their participation in the management of risks. Personnel are required to report all accidents and near-miss incidents under the SmartBay “just-culture” policy.

A.8.2.1 SmartBay “Employee Handbook”

Human resource procedures are detailed in the SmartBay “Employee Handbook” which applies to all personnel and provides governance for the management of personnel.

The “Employee Handbook” is subject to the HSEQ management system documentation and records procedures.

The General Manager ensures that the Employee Handbook meets all current applicable employment legislation.

All employees are required to comply with the requirements of the HSEQ and the meaning of the incorporated Safety Statement, See Employees Handbook.

A.8.3 Organizational knowledge

SmartBay ensure that all personnel are fully familiarized in the organizations systems and activities at least to the extent of their individual and team responsibilities.
All new personnel are inducted into SmartBay and made aware of the organizational activities in the context of their assigned roles, HSEQ Management System, HSEQ Policies and emergency procedures within the context if their role and responsibilities.

New employees or personnel transferred to new assignments are given proper familiarization with their duties, instructions which are essential prior to carrying out tasks both ashore and offshore.

SmartBay ensure that personnel receive relevant information on the HSEQ Management System in a working language or languages understood by them.

Records are kept of all new employee inductions and familiarization.

This section also interacts with Section 6.1 Actions to address risks and opportunities.

**A.8.4 Human Elements**

**A.8.4.1 General**

All personnel doing work that could affect health, safety, protection of the environmental and conformity to product and service requirements shall be competent on the basis of appropriate education, training, skills and experience.

**A.8.4.2 Human Elements**

To ensure that SmartBay can consistently meet customer and applicable statutory and regulatory requirements, the organization shall provide the persons necessary for the effective operations of the HSEQ Management System, including the processes needed.

SmartBay shall employ personnel on an inclusive basis, medically fit relevant to their duties. The Company’s recruitment and employment policies are compliant with national and international regulations and guidelines. The Company shall monitor the health and wellbeing of its personnel and control working arrangements that avoid fatigue and stress in the workplace.

Criteria for suitability to performance functions within the scope of business activities will depend on the particular training and skills required for the intended work activity.

New employees are not assigned duties until they have been satisfactorily inducted.

As part of the new employee induction process all personnel are familiarized with how to access the HSEQ Management System, become aware of its purpose, and to locate procedures relevant to their function within the organization.

SmartBay complies with working time directives and is careful in implementing procedures and guidelines for the avoidance of stress and fatigue in the workplace.

SmartBay promotes mentoring and operates an “open door” policy together within a “just culture” whilst not degrading “natural justice”, there are no recriminations against persons reporting near-miss incidents including violations. See Section 12 Improvement.

Additional or refresher training is a preferred means of dealing with violations where appropriate to do so.

Disciplinary action is taken against individuals where neglect or disregard for the HSEQ is proven.
A.8.4.3 Working Hours

SmartBay recognises the positive benefits to health and wellbeing that rewarding employment can bring. Excessive working hours can adversely affect workers’ health and wellbeing, safety and performance.

As part of the overall health and safety policy, SmartBay is committed to reducing the risks associated with excessive working hours and will meet the requirements of the European Working Time Directive enacted in Ireland by the Organisation of Working Time Act, 1997.

In general under the above regulations, employees are not expected to work for more than 48 hours per week (normally measured over a 17 week ‘reference’ period). Additionally all personnel are entitled to:

- A minimum daily rest period of 11 hours uninterrupted rest between finishing work and starting the next day.
- A weekly rest period of 24 hours uninterrupted rest within each seven day period; or a fortnightly rest period of 48 consecutive hours within each 14 day period.
- The weekly rest period should not include any part of the daily rest period.
- A break of 20 minutes if your daily working day is more than 6 hours long.

In certain circumstances personnel are exempt from these rest break provisions and they may be asked to work into breaks if:

- There is a genuine need for continuity of service.
- The work is affected by unusual or unforeseeable circumstances beyond the company’s control, or exceptional events, or where work is affected by an accident or risk of an accident.
- The work has a foreseeable surge in activity.

If rest breaks cannot be received then protection will be given as may be appropriate in order to safeguard health and safety. Notwithstanding there is a right to a minimum of 90 hours rest per week.

Hazard Operability, Hazard ID, Risk Assessments and Permits to Work shall take into account working hours and the amount of rest taken in the previous 24 hrs from the time a task commences.

See SmartBay “Employees Hand Book”.

A.8.4.4 Determining required competences

SmartBay has established and maintains procedures for identifying any training which may be required in support of the HSEQ Management System and ensure that training is provided for all personnel concerned.

Management identifies the training needs appropriate to the activity, tasks, responsibilities and authorities, and emergency preparedness.

Each section of the work flow is examined and the training needs evaluated so that the appropriate individuals can be brought together. Where suitably trained persons are not available then training is conducted where practicable.

Where there is no alternative skill level available then an assessment is made of the person against the tasks and an impact assessment conducted. It is anticipated that where possible personnel will pool their expertise to overcome skills issues dynamically.
Where statutory training applies only full compliance is acceptable except in a serious emergency situation where risks are assessed dynamically. See Section 16 Emergency preparedness and response.

For example: Offshore workers carried out as passengers to an offshore marine energy site should be capable of carrying out basic emergency actions including using the VHF to transmit, relay, receive “Mayday” distress calls, e.g. the boat Master collapses with a seizure a SmartBay offshore worker may needs to call for help (“Mayday”) on the VHF Channel 16 and take charge of the boat, when he / she may have no training or statutory certification to use a marine VHF radio transceiver.

Written procedures indicate the minimum levels of training and skills necessary for each part of the process.

Method Statement give specific details of skill requirements: eg: gas or TIG welding; supervising lifting operations, or buoy recovery.

The HSEQ Management System regards training and competence as a control in the Risk Assessment process and as part of the whole risk management regime.

SmartBay will assess the training needs when the SeaStation is commissioned and deployed.

**A.8.4.5 Training and Competence**

SmartBay ensures that that all personnel involved in the Company’s HSEQ Management System have an adequate understanding of relevant rules, regulations, codes and guidelines.

Management carry out training needs assessments at one or more of the following times:

- During annual staff appraisals.
- HSEQ familiarization and refresher training.
- Statutory training e.g. first aid, fork truck training.
- Competency and vocational training and education.
- during project planning.
- Following incidents or as part of investigations into near-misses and accidents, or incidents of pollution.
- When individuals are assigned new duties including new authorities and responsibilities as appropriate.
- Before new equipment or when equipment is modified. See Management of Change.
- As part of investigations into Quality failures.
- Further to complaints.
- When new legislation results in changes to procedures or Method Statement.
- Training needs and reviews of training carried out.

Where training is found to be inadequate or an opportunity is identified for improvement the management take action to provide the additional training.

Management is in overall charge of projects to assess the competences needs as part of the Quality assurance process.

Staff appraisals assist SmartBay in assessing the training budget requirements.
A.8.4.6  Skills Training Records and Matrices

SmartBay maintains up to date records of training for all personnel in the staff training database. A skills matrix is maintained in order that trained personnel are correctly allocated to work activities.

The skills matrix includes quality, safety, environmental and maritime training.

Managers, supervisors, individuals and colleagues have access to the skills matrix.

The skills matrix is kept up to date and is made available via the common hard-drive.

Up to date records of all training including that of senior management are maintained.

Copies of individual training certificates are available for inspection. Individuals are responsible for keeping the original certificates safe and must monitor any statutory training expiry dates. Management shall monitor statutory training records for expiry and initiate retraining as necessary.

SmartBay HSEQ relevant training certificates are not considered as confidential information unless special circumstances apply.

A.8.5  HSEQ Awareness

Persons doing work or work related activities, regularly or temporarily, under SmartBay’s direct and indirect control shall be made aware of:

a) The HSEQ Policy.

b) Their contribution to the effectiveness of the HSEQ management system, including the benefits of improved occupational health & safety, environmental protection and quality.

c) The implications of not conforming with the HSEQ management system requirements, including the consequences, actual or potential, of their work activities.

d) Information and lessons learned from relevant incidents such as: near-misses, accidents, incidents of pollution and quality issues.

e) The benefits of reporting “near misses” under the “just culture”.

A.8.6  Information, communication, participation and consultation

A.8.6.1  Information and communication

SmartBay has determined the need for internal and external information and communications relevant to the HSEQ Management System including decisions:

a) On what information to disseminate.

b) On what to communicate.

c) When to communicate.

d) To or with whom to communicate:
   1) Internally among the various levels and functions of the organization.
   2) With contractors and other visitors to the workplace.
   3) With external interested parties.

e) How to communicate.

f) How it will receive, maintain documented information on, and respond to relevant communications.

SmartBay defines the objectives to be reached by informing and communication (reason behind the communication) and evaluates whether the communication objectives have been met.
Example: Informing Marine Institute that a test device has been deployed on site successfully and ready for testing.

SmartBay takes into account diversity aspects (e.g., language, culture, literacy and technology) as appropriate when considering its information and communication needs.

A.8.6.2 Bridging Documents

Communications include the drafting and use of Bridging Documents which link communications and HSEQ processes between SmartBay and clients and or contractors for the purposes of harmonizing methods and integrating emergency response and information.

See TIER 2 Procedures

A.8.6.3 Participation, consultation and representation

SmartBay ensures effective participation in the HSEQ Management System by personnel at all levels and functions by:

a) Providing personnel with the means and resource to participate in, as a minimum, the process of:
   1) Policy.
   2) Planning.
   3) Operations (implementation).
   4) Performance evaluation and improvement (evaluation, corrective action, and preventive actions).

b) Providing personnel, or their representatives, and contractors, stakeholders, access to relevant safety, environmental or quality information, necessary for the successful completion of the business and or operational activity.

c) Facilitating and supporting participation wherever possible.

d) Encouraging timely reporting of work related HSEQ hazards, risks and incidents; (see also “Just Culture”; removal of obstacles and barriers).

e) Encouraging outputs from HSEQ Monthly Reviews.

f) Encouraging ideas leading to improvements.

g) Ensuring that all ideas, suggestions and other inputs and exchanges of information are considered as part of management’s or supervisory decision making processes.

h) Information shall be exchanged at a level understood by participants at all levels in the organization making due allowance for competences.

SmartBay ensures that, when appropriate, relevant external interested parties (principals, clients, contractors, agencies and stakeholders including ship managers and their ship Masters) are consulted about matters pertinent to the HSEQ Management System, e.g., navigational safety reporting to harbour authorities.

To ensure “ownership” of the HSEQ by all personnel at all levels personnel shall assume their assigned responsibilities for the HSEQ Management System, including adherence to the SmartBay requirements to prevent injury, illness, environmental impacts and nonconformities.

A.8.7 Infrastructure including offshore equipment

SmartBay is responsible for fixed, owned and managed infrastructure elements and additionally transient elements such as leased or third party equipment managed by SmartBay for clients on a short term basis.
Safety Management System

SmartBay considers all aspects of design, operation, maintenance and performance in terms of the effects that infrastructure has in the provision of safe, clean and effective resource.

Infrastructure consists of *(inter alia)*:

   a) Buildings and associated utilities.
   b) Equipment including hardware and software.
   c) Workshops, tools and plant.
   d) Buoys, cables and other offshore equipment.
   e) Transport including marine craft.
   f) Information and communication technology.
   g) Instrumentation.
   h) Hired in equipment such as surveying / measuring devices.
   i) Sub-sea cable and observatory.

Note: Hired in craft such as RIBs or workboats supplied with a skipper / crew are a resource and should be fit for purposes in every respect. Covered in Section A.8.6.1

A.8.8 Infrastructure – Working Environment - welfare

SmartBay ensure that the fixed shore based working environment is well planned out and suitable for the work being carried out. Offices and workshops are adequate for the purpose to ensure product and service conformity and ensuring that the work environment meets at least the following criteria:

   a) Layout, safe distances between machinery, with well laid out walkways.
   b) Working environment takes into account any employee disabilities or impairment as appropriate to risk assessed activities relative to the position of the employee.
   c) Suitability for work activities.
   d) Provision of safe access to buoys and other site related equipment.
   e) Good ventilation and heating arrangements.
   f) Lowest practicable noise levels.
   g) Well marked fire escape doors with clear access routes.
   h) Well maintained, clean and hygienic welfare facilities.
   i) Hazard warning signs, first aid boxes and eyewash stations.
   j) Good fire prevention arrangements, adequate, suitable, regularly serviced fire extinguishers.
   k) Periodic inspections of electrical plant and installations.
   l) Electrical portable appliance testing.
   m) Securing and fire detection / alarm systems and procedures with clearly marked external muster station and ensuring that all personnel working on site are familiarized.
   n) Asbestos certification.
   o) Legionnaires disease – cleaning and periodic testing or water systems including faucets, shower facilities and workshop test tank.
   p) Facilities maintenance and cleaning arrangements.
   q) Meets all National HSA legislation and follows best practice.

SmartBay has arrangements for office cleaning and the workshop staff are responsible for keeping the workshops clean and tidy.

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The working environment is inspected once per month at intervals not exceeding 6 weeks by the HSEQ Designated Person and/or Safety Officer and any deficiencies noted and corrective actions initiated and followed up to close out.

Records of inspections are maintained.

**A.8.9 Monitoring and measuring resources**

SmartBay has determined what needs to be monitored to meet the requirements of the relevant International Standards, legal and other requirements subscribed to, including:

a) The criteria against which the organization will evaluate HSEQ performance *including*:

1) Number of OH&S accidents.
2) Environmental Incidents.
3) Quality / OH&S and Environmental nonconformities.
4) Compliance obligations (Health, Safety, Environment and Quality).
5) Near miss reporting.
6) Lost time to injury.
7) HSEQ Objectives.
8) Customer complaints.
9) Audit performance.
10) Corrective and preventive action target performance.
11) Operational controls, service provision and production performance

b) The methods of monitoring, measurement, analysis and evaluation, are practicable to ensure valid results.

c) When monitoring and measuring shall be performed.

d) When the results from monitoring and measurement shall be analyzed and evaluated.

e) Reporting forum and criteria including at:

1) HSEQ Quarterly Review (management review).
2) Management and operations meetings.
3) Project meetings (as applicable).
4) HSEQ Monthly Review Meetings (where relevant).

Where it is appropriate to use monitoring or measurement equipment SmartBay ensure it is calibrated or verified. See Section B.11.7 Calibration of monitoring and measuring devices.

SmartBay analyzes and evaluates the HSEQ performance and the effectiveness of the HSEQ Management System at HSEQ Quarterly Review meetings as inputs and outputs are disseminated for information and action.

Evaluation information is made available on the Common drive in appropriate formats such as the use of spreadsheet tracking reports for Inspection and Action follow up actions.

Records are maintained of performance reports for statistical purposes including identification of trends and as evidence of monitoring and measurement of the HSEQ management system and project performance.

**A.8.10 Documented Information**

SmartBay controls all documents and data relevant to the HSEQ Management System.

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A.8.10.1 General – documentary requirements

SmartBay ensures that:

a) Valid, up to date, documents are available at all relevant locations.

b) Changes to documents are reviewed and approved by authorized personnel.

c) Obsolete documents are promptly removed.

The documents used to describe and implement the HSEQ Management System is referred to as the HSEQ Safety Management Manuals Tier-1 and Tier-2.

Documents are principally maintained in electronic format.

Once printed the documents status changes to “uncontrolled”. Whereas most documents can be completed on-screen or via the Intranet or in the future on ENERIT, some documents are completed manually with the data transferred later or scanned as a contemporaneous (current form) document.

A.8.10.2 Creating and updating documents

New documents including screen based formats are created and controlled using the following criteria:

- Document title.
- Document reference.
- Issue date.
- Version number:
- Authorizing person.

Requests are made to the HSEQ Designated Person for any changes and processed in terms of priority and significance.

Change requests are considered and feedback is essential so that the individual or group making the request participates fully in the amendment process and a level of “ownership” assumed.

It is essential that all new and revised documents are “impact assessed” to ensure that the changes do not conflict with any other procedures or adversely affect any processes.

(See Section A.9.3 Management of Change)

Amended documents are given new issue dates and the Version number incremented by 1. If the authorizing person has changed then this field should be updated.

The previous version is removed from the HSEQ SMS live program and archived in the HSEQ Obsolete Documents folder where it is effectively “quarantined” to prevent accidental use.

New document revisions and amendments to the HSEQ Management System are recorded in the Document Control Section at the front of the relevant folder. This applies equally to electronic versions of the HSEQ Manuals.

Distribution is recorded and back up versions are protected by SmartBay.

A.8.10.3 Control of documented information

Documents including screen based formats are controlled using the following criteria:

- Document title.
Document reference: i.e. Three letters, 2 digits, hyphen date format: YYYYMMDD. Version Number followed by narrative title.

e.g.: SCA01-20150401.1 HSEQ Monthly Review Report and Agenda

• Authorizing person.

Control of documents is important to ensure universal conformity and to harmonize standards within the Company.

All HSEQ documents are controlled on the SmartBay shared drive system managed by the SmartBay Project Coordinator.

**Important Note:**

*Using out of date documents such as Procedures, Method Statement or Checklists could be dangerous for personnel or to the environment since all systems are “risk based” and are updated to take into account latest risk and impact assessments and their introduction is impact assessed so as to avoid internal conflicts between processes. Similarly out of date documents could have an adverse effect on Quality and could result in product or service deficiency leading to customer complaints or liabilities.*

*Note: Documents are developed by SmartBay and controlled.*

(Ref 9001:2008- 4.2.3 & ISO/PC 9001:2015 7.5)

**A.8.10.4 Protection of systems and data back-up arrangements**

The SmartBay network consists of 3 servers, 4 desktop computers, 8 portable computers, 1 laptop and several active and passive network devices (switches, routers, WiFi hubs), all interlinked. All data, including client devices or instruments performance data are backed up internally between the servers via ArcServe Backup software. Selected data are copied to the “cloud” (SmartBay’s Edustorage off-premises account) or to Tape (then later taken off-premises) using the same backup software; this includes business continuity data (software development files, business files, administration files, users files, system images).

**A.8.10.5 Systems Software**

SmartBay IT systems software versions shall be controlled with master back-up copies of *(inter alia):*

a) Operating Systems software (kept in CD / DVD storage).

b) Communications software.

c) Sea++ Data Acquisition System.

d) Device drivers (included in Sea++).

e) Application Software (including SQL Server Integration Services, Jobs and Scripts)

f) Proprietary software (kept on CD / DVD storage).

g) Route / modem settings.

h) IT Security Information.

i) Network plans and cabling diagrams.

j) RAID control software and configuration.

k) Device data.

l) Software user license information.

m) In-house programs and scripts.

n) Client data.

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SmartBay gives priority to system resilience and conducts, maintains records of FMEA (Failure Mode Effect Analysis) to ensure maximum protection and conduct systems audits.

SmartBay ensures system integrity by maintaining and regularly testing un-interrupted power supply devices and power management / contingency software to ensure business continuity. This is especially important for systems which are sensitive to data monitoring on behalf of clients and stakeholders.

Back up systems are stress tested to ensure integrity and records maintained.

Records of system protection tests are maintained in the asset database and hard copy certificates scanned with originals kept secure and available for inspection, e.g. UPS testing.

A.8.10.6 Software Development

SmartBay does not develop core software for clients.

SmartBay develops software tools which provide for the organization or management of data as part of the customer service programme. This service involves the splitting up of data or “parsing” to facilitate the abstraction and dissemination of device output data. The data arriving ashore by cable or wireless is unusable in its raw state and parsing is required to make it usable.

The client's needs are gathered and scripts are written to satisfy those needs. The software is developed on a “test platform” on which “Sea++” output and DB storage and dissemination routines are tested and validated for the client as part of the design verification process.

See B.1.7 Software Development

A.8.10.6 Control of documented information including “records”

Software Development Cycle records are generated and preserved according to SmartBay Company and HSEQ Management System records policy and protected and subject to audits at least annually conducted with the SmartBay internal audit procedures.

Records are:

- a) Secure.
- b) Accessible to staff as needed and authorized.
- c) Available to auditors and other interested parties on request.
- d) Legible.
- e) Identifiable and traceable.
- f) Retrievable.

Where customer project related data is held, special attention is placed on its security, integrity and preservation and backed up. Contractor or external provider’s intellectual and electronic data property is treated as if it were customer related.

*Interacts with HSEQ Section A.9.2 including Customer & Contractor Property.*

See Section A.13 Records Retention.

A.8.11 Purchasing

See also Section: B.10 Control of Outsourced Products and Services

A.8.11.1 Purchasing process
Safety Management System

SmartBay ensures that purchased products and services conform to specified purchase requirements. The type and extent of controls depends on the application of the purchased product or service and on the possible effect on the quality of delivered service or product, safety and the environment.

SmartBay has documented procedures for requisition and procurement, and records are maintained.

A.8.11.2 Supplier selection and evaluation

SmartBay evaluates and selects suppliers based on their ability to supply products in accordance with their requirements. Criteria for selection, evaluation and re-evaluation is based on previous experience of service levels, quality, cost, after market support including warranty and the efficiency in which problems are resolved, including change requests.

Records are maintained of evaluations and any necessary actions arising from the evaluation.

Purchasing activities are subject to SmartBay tendering and purchasing policies, responsibilities and authorities.

Suppliers are required to describe how the provision of products and services is to be met as part of the offer or tender response.

Where outsourced supply is complex and or when products and services are incorporated into the products and services provided by SmartBay to its customers the organization may need to conduct Second Party Audits to verify compliance with design, project management and service provision requirements.

See Section A.8.10.5 Control of documented information.

A.8.11.3 Purchasing information

Detailed accurate purchasing information is used to describe the product or service to be purchased within the “Purchase Order” document including, where appropriate (inter alia):

a) Type approval, test or validation to verify that goods or services meet required criteria*1.
b) Instructions to supply test certificates.
c) Personal Protection Equipment and all safety equipment, marine equipment and lifting gear should carry the CE Mark.
d) Marine equipment must have the Marine Equipment Directive conformity mark and the CE mark.
e) Requirements for competency of personnel supplied to perform services.
f) Meets HSEQ management system requirements.
g) Ensure legal compliance where duty of care is required at requisition (using UK PUWER as an Approved Code Of Practice for Ireland)*2.

*Note 1: Examples: this includes SWL criteria for lifting accessories and test / inspection certification, Material Safety Data Sheets certifying biodegradable product and or harmless to marine life.

*Note 2: Where relevant, PUWER requirements for safety aspects to be specified at time of procurement.

SmartBay ensures the adequacy of specified purchase requirements prior to the purchase order being raised and sent to the supplier.

The Purchase Order form when completed is sent to the Administration department.

Expenditure is approved on the basis of VFM (Value For Money) review, use of approved supplier, quality and detail of purchasing information. The administration department are not experts on many
of the types of goods and services requested however purchase orders are sent for approval by a manager, and where the goods or services are a certain level of cost approval is required from the General Manager. Large items may need “board” approval if not already included in the budget.

See Fig 1: A.8.11 Purchasing Process flowchart

A.8.11.4 Verification of Purchased Product

SmartBay inspects all purchases at the time of delivery to ensure:

1. The goods delivered are expected.
2. Goods correspond to the purchase order specifications.
3. Goods are not damaged.
4. Associated documentation accompanies the goods or are readily available (where appropriate) – including:
   a) Material Safety Data Sheets (MSDS), including Environmental Data.
   b) Test certificates.
   c) Calibration certificates.
   d) Type approval certificates

Where it is necessary for verification to take place at the suppliers premises SmartBay shall state the intended verification arrangements and method of release in the purchasing information.

Where purchased goods or services fail to meet expectations the issues raised shall be brought to the attention of the supplier in writing and remedial action requested, documented, monitored and the resolution reviewed, assessed and “closed out”.

A.8.11.5 Warranties and Quality Assurance

Ensuring control over outsourced processes does not absolve SmartBay of the responsibility of conformity to all customer, statutory and regulatory requirements. The type and extent of control to be applied to the outsourced process can be influenced by factors such as:

a) The potential impact of the outsourced process or products on SmartBay’s capability to provide product and services that conform to requirements.

b) The degree to which the control of the service is shared between SmartBay and the supplier.

c) The capability of achieving the control necessary to ensure the required performance of the outsourced process. eg: diving services, or the hire of workboats.

Tender processes shall require appropriate warranty and after market provision.
Fig 1: A.8.11 Purchasing Process

Consult with colleagues – research information – design interface

Consult with clients or stakeholders

Determine Requirements

Purchase Information – description including specifications, and legal requirements.

Nominate approved suppliers (or evaluate new supplier against other options)

Complete Purchase Order Form (by person making request)

Supply options – Best – Cheapest, most suitable, lead times, after sales, approvals, warranties.

Consult with clients or stakeholders

Return P/O Form to Admin (check form for completeness)

Assign nominal ledger codes by line manager

Administration seeks approval from Management

Approval processes consultations, verifications

Purchased Order number assigned when approved

Records of communications (enquiries, replies, quotations, inc delivery lead time and logistics)

Purchase arranged Note Sales Order Number

Progress orders

Verification of Purchased goods (checking delivery)

Delivery Documents (POD)

Slow away goods Add to inventories

Update Asset Database (determine maintenance)

Check supplier confirmations.

Check signed delivery note against supplier invoice

MSDS Information (REACH / COSHH)

Refer back to supplier if any problems

Process Invoice for payment (to agreed terms)

Remit to vendor

Receive goods.
Check deliver note details against goods / noting damage

Post to indicated nominal code for the relevant cost centre

Supplier Evaluation Records

Evaluate Supplier

Note Sales Order Number

Stow away goods Add to inventories

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A.8.12 Lifting Operations and Lifting Equipment

SmartBay has adopted the Lifting Operations and Lifting Equipment Regulations 1998, Approved Code of Practice UK HSE L113 otherwise known as LOLER.

A.8.12.1 Lifting Operations and Lifting Equipment – Legal Requirements

SmartBay complies with lifting operations and lifting equipment regulations.

Principal legislation in the Republic of Ireland is the:


SmartBay has identified mandatory applicable sections of the Republic of Ireland Regulations that must be embraced by the HSEQ Management System:

a) Work equipment for lifting loads.
b) Cranes.
c) Support of lifting equipment.
d) Work equipment for lifting goods or persons.
e) Hoists and lifts.
f) Winch operated hoists and lifts (lifting using winches and A frames).
g) Conditions regarding lifting of persons.
h) Lifting accessories (shackles, swivels, pennants, legs etc.).
i) Work equipment for lifting non-guided loads.
j) Lifting equipment – signalling and operation.
k) Examination and testing of lifting equipment.
l) Reports by competent persons (inspection reports).
m) Keeping records and registers of lifting equipment within SmartBay Asset Database.
n) Safe working loads for loaders when used as cranes (forklift with jib).
o) Construction, testing, examination and safe working load of lifting accessories.
p) Delivery of loads with lifting accessories attached.
q) Hiring of lifting equipment.
r) Verification competence of crane hire plant drivers.
s) Duty of the Master of a ship or workboat in respect of examination of lifting equipment.

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<th>Inspections</th>
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<tr>
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<td>Prior to use</td>
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<tr>
<td>Weekly inspections of lifting gear in regular use</td>
<td>GA2</td>
<td>weekly</td>
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<tr>
<td>Lifting equipment which lifts people</td>
<td>GA3</td>
<td>weekly</td>
</tr>
<tr>
<td>Inspections of Work Equipment for Working at Height Prior to use</td>
<td>GA3</td>
<td>Prior to use</td>
</tr>
<tr>
<td>Thorough Inspections of all Lifting accessories, including shackles, hooks, chains, strops, fittings etc</td>
<td>GA1</td>
<td>6 months</td>
</tr>
<tr>
<td>All other lifting equipment including cranes and loading equipment</td>
<td></td>
<td>12 months</td>
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Note: above in accordance with mandatory examination regulations including GA1 mandatory HSA Thorough Inspection report form. In all cases a Risk Assessment should be undertaken to ensure the examination frequency is appropriate.
SmartBay lifting operations and lifting equipment procedures require compliance with the Republic of Ireland regulations.

**A.8.12.2 Lifting Equipment Regulations**

SmartBay uses an Asset Database to maintain compliance with the legal requirement to maintain a register of lifting plant, equipment and lifting gear accessories.

The regulations relating to records and registers of lifting equipment stipulate that:

*abstracted from the Ireland Regulations SI 299/2007*

1. SmartBay maintains copies of Test and Inspection reports from the point of supply and those of subsequent tests and inspections, and that such reports are:
   - Kept at the place of work when the lifting equipment is permanently located there. In the case of lifting equipment on a development site, are kept at the site office or at the business address of the contractor for whom the report was made, and in the case of mobile equipment, is kept on the equipment in addition to being available for inspection at the address of the equipment owner.

2. SmartBay ensures that:
   - a) a register of lifting equipment and lifting accessories containing details of the equipment, distinguishing number, CE stamp, date of first use and date of last thorough examination and testing is maintained and kept available for inspection by an inspector, and
   - b) if the equipment does not have a distinguishing number or mark, one of long lasting duration is provided i.e. stamped letters and numbers.

**A.8.12.3 Lifting and load bearing equipment - reports by competent persons**

A competent person carrying out an examination or inspection of lifting and load bearing gear, including mooring equipment, under HSA Regulation 52 shall — Health Safety and Welfare at Work (General Application) Regulations 2007 as amended:

a) Prepare a report of the result of every examination and test as referred to in Regulation 52 containing the particulars that are set out in Part E of Schedule 1, using the relevant GA Form

b) Where work equipment is examined pursuant to Regulation 52 and the examination reveals that the equipment can only be used safely if certain repairs are carried out or if the person making the examination foresees a need for such repairs:
   - (i) Inform in writing the owner and user of the need for such repairs or the potential need.
   - (ii) Not later than 20 days after the completion of the examination, send a copy of the report of the examination to the Authority where immediate cessation of the work has been advised, and
   - (iii) In the case of potential need for repairs, quarantine and tag the item and specify the period within which, in his or her opinion, the repairs shall be carried out.

c) Records of Thorough Examinations and Inspections should be recorded on the HSA Forms specified in the table A.8.12.1 which can be downloaded from the HSA website.

If the competent person conducting the thorough examination is a SmartBay employee that person should be independent from the person carrying out maintenance on that lifting equipment to ensure impartiality.
HSA GA report forms for lifting gear examinations and inspections shall be maintained in hardcopy and retained for at least 5 years whilst keeping the Asset Database updated.


A.8.12.4 Lifting Equipment – management and records

A.8.12.4.1 SmartBay is required by law to maintain a register of lifting equipment and accessories which it does by use of its bespoke Asset Database system on the common hard-drive. The Asset Database is used to record and track lifting gear and for management of maintenance throughout the life cycle of the asset.

A.8.12.4.2 The Asset Database records important information regarding lifting equipment including:

1) Description of item – for example: shackle, hook, wire and ferrule.
2) Identification marks – including stamping, tags and colour coding.
3) Test Certificate details – date, identification reference, or manufacturers traceable batch reference in the case of wire rope. Safe Working Load (SWL), Minimum Breaking Strength (MBS), Minimum Breaking Load (MBL), test house and competent person, wire ropes with terminations including talurits or resin sockets shall be tested and marked on the ferrule. Wire splices for lifting are prohibited.
4) Equipment used for lifting personnel shall be clearly marked, ID SWL and CE corresponding to valid certification and inspection records and thoroughly inspected before use each time. Personnel protection equipment including safety harnesses, safety lines and lanyards including fall arresters are NOT to be used for lifting persons, See Emergency Response Plans for recovery of persons using harnesses.
5) Safety and lifting equipment used in the marine context must carry or be traceable to the EU Marine Directive.
6) Utilization – details of when and where the item was used.
7) Tracking – the location and utilization of the item on a continuous basis.
8) Grouping – is the item an integral component within a system such as a 4 legged sling; or wire fitted to a winch, crane or hoist
9) Accessory details – is the unit allocated to work in conjunction with a system – such as a mooring swivel.
10) Periodic inspection dates and outcomes, with reference to the report and certification – with details of competent person.
11) Insurance inspection records.
12) Details of maintenance and repairs.
13) Disposal details – cause or reason, authorization, date and method of disposal.
14) Incident – records of any incidents and retention in quarantine as evidence.

A.8.12.4.3 SmartBay records the ID nr of the relevant test certificate such that the latest inspection reports by a competent person can be traced.
A.8.12.4.4 Inspection and test records shall be obtained for each item of lifting equipment with hard copy certification and documentation filed for easy access against a note made in the Asset Database to that effect.

A.8.12.4.5 When lifting gear is taken out of service, for whatever reason, it is tagged or marked with paint, quarantined and removed from the Asset Database with a note as to how and when the asset was disposed of and records moved to the archive table. Damaged, corroded or otherwise defective lifting gear shall be cut up to prevent re-use after scrapping.

A.8.12.4.6 Shackles without stamped Safe Working Load (SWL) and identification marks shall not be used for lifting, hauling, cargo lashing or anchor and mooring or guard rails since their safe working load strength cannot be ascertained.

A.8.12.4.7 Jobs on items, including inspection and test dates, are sorted by date so that technicians can work on a planned basis.

A.8.12.4.8 Personnel ordering or requisitioning mooring equipment, lifting gear accessories, wire ropes, chain cable and mooring or recovery pennants or any gear where weight is to be applied shall ensure that a test certificate(s) or batch certificate in the case of wire and fibre ropes is requested as part of the supply.

A.8.12.4.9 For the purpose of clarity, a compression splice or ferrule ("talurit") ferrule type termination shall be clearly identifiable and shall be used to identify the wire accessory that it forms a part of.

A.8.12.4.10 Ferrule splicing shall only be carried out by “competent persons” at contract riggers using well maintained approved equipment.

A.8.12.4.11 Where very small ferrule splicing is required for none lifting or dynamic tension loads, the work may be carried out in house by trained persons using well maintained, fit-for-purpose, equipment. A record of all ferrule splicing regardless of size shall be maintained in the Asset Database which shall include the diameter of the wire, ferrule class and size, and the name of the operator and the purpose of the wire. Small ferrules cannot be stamped with ID however in some cases a tag can be applied with identification that is traceable.

A.8.12.4.12 Swaging should only be carried out by competent persons. They are only to be used for “standing” rigging such as antennae stays. The same rules apply to swaging as apply to small compression ferrule splicing.

A.8.12.4.13 Maintenance, scheduled or unscheduled on all lifting equipment shall be recorded in the Asset Database which effectively acts as the lifting equipment planned maintained system.

A.8.12.4.14 Only persons who are trained in the use of the Asset Database shall be granted access permission to the database. Access rights are arranged by the system administrator following a request from the General Manager or appointed deputy.

A.8.12.4.15 The Asset Database is part of the SmartBay backup regime.

A.8.12.4.16 Computerized Records of the Asset Database system are retained indefinitely.

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SECTION A.9: Planning and Control

A.9.1 Strategic Planning and Development

SmartBay engages in strategic planning for the future use of the Test Site and associated technical support systems to ensure a sustainable contribution to wave energy technology.

A.9.1.1 Ocean Energy pipeline

SmartBay is responsible for the development, engagement and progression of the ocean energy pipeline of potential developers interested in testing in Galway Bay, this includes:

- Ocean Energy developer research.
- Attendance/participation at conferences and events.
- Engagement with developers.
- Site visits if appropriate.

A.9.1.2 Research and Development pipeline

SmartBay conducts research into and strategically plans the development, engagement and progression of both industrial and academic clients who may wish to use the test site to test and validate their novel equipment and devices before either going to market or progressing their research to the next Technology Readiness Level (TRL). This includes:

- Attendance/participation at conferences and events.
- Presentations outlining SmartBay facilities and services.
- Engagement with potential clients.
- Site visits if appropriate.

A.9.1.3 European Union (EU) funding

SmartBay is responsible for seeking relevant European proposals which may be of interest to SmartBay Ireland; this may also include attending project specific meetings and events both nationally and at a European level. Once a funding call has been identified, the Strategic Funding & Project Coordinator reviews the call with the General Manager and/or Senior Project Manager. The Strategic Funding & Project Coordinator then contacts the relevant people (National Contact Point(s) NCP, Proposal Coordinator, Proposal Partners) to begin working on the SmartBay input into the proposal document. This may require additional technical input from the SmartBay team.

The Strategic Funding & Project Coordinator is responsible for the proposals if and when any proposal is funded. This required attending project kick-off meetings and working with the various SmartBay teams to ensure that all Work Packages as outlined in the proposal have sufficient SmartBay input and administration.

A.9.1.4 Geographical Information Systems (GIS) administration

The Strategic Funding & Project Coordinator will assist the Senior Project Manager, when required in relation to the spatial planning of various projects as well as spatial planning within the test site. This may involve data request(s) or dataset acquisition from relevant national or international organisations. This data is then stored on relevant SmartBay common drives and inputted into the appropriate GIS system when required. SmartBay uses QGIS for its spatial planning requirements.
A.9.2 Operational planning and control

SmartBay plans, implements and controls its processes needed to meet requirements for the provision of products and services and to implement the actions required to take into account the needs, risks and opportunities relevant to the business and its activities, by:

a) Determining the requirements for the product and services.

b) Establishing criteria for the processes and for acceptance of products*¹ and services.

c) Implementing control of the processes in accordance with the criteria, customer requirements and any statutory or other external requirements; determining the resources needed to achieve conformity to product and service requirements.

d) Determining the OH&S risks and determine the necessary controls.

e) Identify any potential opportunities to eliminate risk, e.g. by outsourcing or improved planning.

f) Estimating, eliminating or taking any opportunity to mitigate the possible environmental impacts from new or compounded environmental aspects identified during planning.

g) The retention of documented information that provides objective evidence of conformity and confidence in the integrity of the processes have been carried out as planned and to demonstrate that requirements for products and services have been met.

The output of this planning shall be suitable for the organization's operations and capabilities.

SmartBay reviews customer requirements and plans accordingly which also involves a review of resources including those which may need to be temporarily hired in to meet requirements.

See Section 12 Control of externally provided products and services.

Where contractors are used there is early consultation at the planning stage.

If during the planning stage hired in specialized equipment is needed then the risks and opportunities are considered and any additional training, skills and logistical support can be appraised e.g. portable generators or specialized seabed scanning equipment.

A.9.2.1 OHS and Environmental Controls

SmartBay shall plan, implement and control processes as needed to meet HSEQ Management System requirements, including the prevention of accidents, environmental incidents and threats to Quality as determined in Section 6. (Risks and Opportunities) by:

a) Determining processes that carry identified hazard(s) where the implementation of controls including prevention is necessary to manage HSEQ risks.

b) Establishing criteria for processes that need to be controlled.

c) Implementing the control of these processes in accordance with established criteria – Risk Assessment, permits to work and Method Statement, as applicable.

d) Keeping documented information describing the determined controls (updating when necessary) to provide the confidence that processes can be carried out safely and cleanly as planned.

e) Developing safeguards to cover situations where the absence of documented information could lead to deviations from the HSEQ policy and objectives.

f) Planned actions shall include enforcement and supervision, as necessary.

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SmartBay maintains records of planning for reasons of due diligence that include:

- For future review in the event of an incident.
- For post project review for learning and continuous improvement.
- To assist in planning future projects.
- To provide evidence of due diligence.
- To meet requirements of International Standards.

### A.9.2.2 Hierarchy of control (See also A.6)

SmartBay has established processes for achieving risk reduction based on the following hierarchy:

a) Eliminate the hazard.
b) Setting conditional criteria – such as wave height and or wind speed limits.
c) Postponing or deferring operations due to weather or sea conditions.
d) Substitute with less hazardous materials, processes, operations or equipment.
e) Use of engineering controls.
f) Use of safety signs, markings and warning devices and administrative controls.
g) Use of Personal Protective Equipment (PPE).

*See Section 8.10 Documented Information*

### A.9.3 Project Planning

When project planning, SmartBay communicates with clients, exchanging at least the following information *inter alia*:

a) Information relating to products and services.
b) Enquiries, contracts, project management, including changes.
c) Detailed project planning information such as “environmental assessments”.
d) Customer and external consultation and participation.
e) Obtaining customer views and perceptions, including customer complaints.
f) The handling or treatment of customer property, including drawings, survey data and software, where applicable.
g) Specific requirements for emergency contingency actions, when relevant.

### A.9.3.1 Customer communications

SmartBay determines the necessary communication processes and has implemented effective arrangements for communicating with customers in relation to:

a) Product / service information.
b) Hazard information.
c) Environmental aspects e.g. *disposal of customer owned lithium batteries*.
d) Enquiries, contracts, project scheduling, changes and fulfilment.

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e) Customer feedback, including customer complaints.

f) The handling of, or treatment and maintenance of customer property.

g) Specific requirements for emergency contingency actions, when relevant.

See also “bridging documents” – Section 8.6.2 & Emergency Preparedness Section 17.

Customer communication shall be retained as records using the “Developer” folder allocated to the project. (Software Process flow chart B.1.7.1)

- Strategic Funding and Project Coordinator, consulting with the Operations and Technical Manager who will identify the objectives and collate information from the client (developer).
- The planning team consists of Senior Project Manager, initiating the project following and enquiry.
- The Project Coordinator and Administrator begins to formalize the project planning.
- The Operations and Technical Manager controls the realization of the project.

A.9.3.2 Determination of requirements related to products and services

SmartBay determines the requirements for the products and services offered to potential customers.

Ensuring that:

a) Product and service requirements (including those considered necessary by SmartBay) and any applicable statutory and regulatory requirements are defined.

b) SmartBay has the ability to meet the defined requirements and substantiate the claims for the products and services, including physical resources and competences.

c) Any HAZOP / HAZID and Environmental Aspects.

A.9.3.3 Review of requirements related to products and services

SmartBay reviews, as applicable:

a) Requirements specified by the customer, including requirements for delivery and post-delivery activities, note “delivery” includes installation and commissioning;

b) Requirements not stated by the customer, but necessary for the customer’s specified or intended use, when known.

c) Additional statutory and regulatory requirements applicable to the products and services.

d) Safety and Environmental aspects.

e) Contract or order requirements that have changed since the original order.

Note: Requirements can also include those arising from relevant interested parties; for example: harbour authorities, ship Masters, mobile crane operators and dive contractors who may have particular requirements necessitating changes to original specification.

Reviews are conducted prior to the organization’s commitment to supply the products and services to the customer, ensure that the contract or service requirements differing from those previously defined are resolved including where additional work means further cost.

Where the customer has not provided a documented statement of their requirements, the customer requirements shall be confirmed by SmartBay before acceptance.
SmartBay shall not undertake work which is not covered by a contract or for which the customer has not documented their requirements unless there is an emergency in which case force majeure conditions apply.

Documented information describing the results of reviews, including any new or changed requirements for the product and services, shall be retained. Document change orders apply.

Where requirements for products and services are changed, SmartBay ensures that relevant documented information is amended and that relevant personnel are made aware of the changed requirements. See Section 6.3 Planning of Changes.

Change orders are reviewed carefully to consider any Occupational Health and Safety issues or those changes which alter or introduce new environmental threats. Changes may present opportunities to make overall improvements in the context of HSEQ.

See Section 6.3 Planning of Changes and Section A.9.3 Management of Change

SmartBay hold fortnightly project review meetings referred to as “Business development, finance and IT planning”, and conducted every alternate fortnight the “Operations, Technical and Project Management” review meetings are held.

A.9.4 Management of change

See also 6.3 Planning Change

Changes arrived from a number of sources and they must be accommodated as part of the design, deployment or installation, maintenance and demobilization processes as well as other non project related activities.

Some of the changes may arise from any number of reasons, including:

- a) Customer changes requirements before or after the contract has commenced.
- b) Difficulties that arise during the design or realization of product or service.
- c) Development of knowledge and experience during the contract.
- d) Changes in industry best practice, codes and guidelines or relevant legislation.
- e) Changes in site locations which affect deployment.
- f) Identification of new operational Hazards or Environmental aspects.
- g) Operational issues that necessitate dynamic changes in deployment methods.
- h) Harbour authorities, HSE / HSA or Environmental Agency planning permission changes.
- i) Delays due to unforeseen circumstances.

SmartBay plans for and manages changes to the HSEQ Management System, whether the changes are temporary or permanent, to ensure that they do not cause a deterioration in OH&S, Environmental and Quality performance, including:

- a) The resolution of incidents and nonconformity, “messages” in findings or lessons learned.
- b) New products, processes or services at the design stage or re-design stage as well as changes in knowledge or information about hazards, environmental aspects and quality factors.
- c) Changes to work processes, procedures, documentation, equipment, organizational structure, staffing, products, services, contractors of suppliers.
d) Developments in knowledge and technology.
e) Changes to legal or other requirements.
f) Changes to HSEQ Management System documents.

SmartBay has established processes for the implementation and control of planned changes. The responsibilities and authorities for managing changes and their associated OH&S, Environmental and business impact risks and opportunities.

All changes are impact assessed before implementation. See also Section 6.3 Planning of Changes

A.9.4.1 Deferral of actions

From time to time it may be desirable for a diarized or regular administrative or maintenance function or task to be deferred.

When any of these actions are associated with the potential for failure or potential changes to the FMEA profile then a documented impact assessment is carried out and documented. The impact assessment process is similar to that of a “Risk Assessment” in which the potential outcomes of deferral or postponement become the hazards and their outcomes become consequences.

An example might be deferring routine battery change at 1000 hrs however if the test or replacement were postponed because of temporary difficulty in obtaining a replacement battery from the usual supplier was not possible. What are the potential risks, and what controls could be introduced?

A.9.5 Control of externally provided products and services

A.9.5.1 General

SmartBay understands the need for outsourced services and products become an extension of the ethos and ethics of the Company. During the planning and design processes an evaluation takes places of potential suppliers of services and products. Service provision should reflect the standards of quality, safety and environmental protection upheld by SmartBay.

Customer interface and project planning takes into account that suppliers should become integrated into the processes developed to meet customer requirements.

A.9.5.2 Control of outsourced provision

See also Section A.8.11 Purchasing

See also B.10 where control of contractors within a project and when CDM might apply.

A.9.5.3 Information for external providers

It is important that SmartBay properly inform suppliers of the detailed requirements, specifications and standards required including legal, safety and environmental compliance needs.

SmartBay shall communicate to external provider’s applicable requirements for at least the following:

a) The products and services to be provided or the processes to be performed on behalf of SmartBay.
b) Approval or release of products and services, methods, processes or equipment.
c) Competence of personnel, including necessary qualifications and experience.
d) Their interactions with SmartBay’s HSEQ Management System.
e) The control and monitoring of the external provider’s performance to be applied by SmartBay.
f) Verification activities that SmartBay, or its customer, intends to perform at the external supplier’s premises prior to deployment.

g) Validation of agreed performance criteria during execution of the provision; (i.e. assessment of performance against key standards) e.g. sampling, testing, calibration and analysis.

h) Documentation and record keeping requirements including back up regimes.

A.9.5.4 Contractors

Effective management of contractors is crucial to successful, safe and environmentally friendly outcomes. Key aspects of effective management of contractors include, communication, planning, information exchange, consultation, coordination, review, management of change and management of non-conformance.

A.9.5.5 Selection of contractors

SmartBay has procedures for the selection of contractors.

In some instances the client (lessee) nominates and or engages with the contractor and in such cases SmartBay insists that adequate legal protection and performance caveats are included in the contract to protect the interests of SmartBay and their principals.

Note: the “client” may be a grant aided wave energy developer, funded research project, or commercial lease.

Client nominated contractors must agree to cooperate with SmartBay and to agree to adhere to the standards established by SmartBay and to statutory regulations, guidelines and approved codes of practice.

A.9.5.6 Tendering process

SmartBay deploys competitive tendering processes when inviting contractors to respond to requests for quotations. The SmartBay policy does not insist on accepting the cheapest option when a more suitable or ultimately cost effective solution can be obtained; i.e. “cheapest best option”.

Contractors must have or have access to the necessary resources.

A.9.5.7 Engagement

Engagement of contractors is made in writing following formal tender review. Contracts or requisitions should be in writing, fully documented to an appropriate level of detail, exchanged, accepted in writing and records maintained.

Onerous or unreasonable trading terms and conditions are not acceptable to SmartBay.

A.9.5.8 Instructions to contractors and suppliers

Contractors and other suppliers shall be instructed in writing clearly documenting the requirements. Purchasing terms and conditions shall be as agreed when the tender response was accepted.

Where contracted out work forms part of the project contractors receive detailed contractor instructions. Contractor performance is appraised jointly from time to time.

See also “management of change”.

See Section B.9 Construction, Design and Management “CDM”.

A.9.5.9 Communications

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Contracts shall be executed under agreed communication protocols detailed in the original instructions. Contractors are required to agree to agreed reporting arrangements.

**A.9.5.10 Inductions**
Contractor personnel are required to undergo Site Safety Induction procedures. Site inductions are required before access to the site is permitted.

Work briefings and debriefings are required for the purpose of ensuring continuous improvement.

Test Site access is by written permit only and must be escorted.

All visitors to the workshop must report to the SmartBay building for induction where arrangements are made for them to be met outside the “P&O” building by an escort. All visitors must sign in at P&O and are given a badge and supplied with PPE if not already doing so.

**A.9.5.11 HAZOP, HAZID and Risk Assessments**
Contractors must agree to conduct HAZOP / HAZID and Risk Assessments which shall be integrated into work instructions and thus forming Method Statements.

**A.9.5.12 Written Method Statement**
Contractors are required to produce Method Statements prior to commencement of any work. Contractors shall be coordinated by the project manager who shall review all Method Statements.

**A.9.5.13 Principal Contractor**
In some cases a contractor may be deemed a principal contractor. Where CDM applies the principal contractor is referred to as a “duty holder” which means they have legal responsibilities in the management of safety for their work activities and in some cases sites. In every case the SmartBay project manager ensures that site safety is coordinated. Duty holders have an obligation to work with the client who may be the lessee or SmartBay depending on the project arrangements.

Where dive services are required and diving contractors are brought in they in turn might have subcontractors to provide support, in which case the dive company is seen as the principal contractor and are responsible for coordinating dive safety overall whilst reporting to SmartBay.

**A.9.5.14 Subcontractor**
Contractors engaged by SmartBay who sub-contract out support or specialist services are responsible for those contractors and shall ensure that working arrangements, safety and protection of the environment adhere to the standards insisted on by SmartBay.

Where the lessee has contracted with SmartBay then suppliers contracting to SmartBay are themselves sub-contractors and they are accountable to SmartBay as principal contractors for HSEQ purposes.

**A.9.5.15 Contractor Legal Compliance**
Contractors are required to act in compliance with applicable laws, regulations, approved codes of practice (ACOP) and industry guidelines.

SmartBay contracts shall require a warranty from the contractors that they will comply with the relevant regulations. SmartBay shall reserve the right to conduct 2nd Party Audits as part of the monitoring, measurement and supplier assessment processes.
A.9.5.16 Operational Controls

The SmartBay HSEQ management describes the various relevant operational controls that are to be applied to all activities.

Procedures and method statements and other safe systems of work prescribe the relevant operational controls. Some will be very specific to an activity carried out within project procedures.

Operational controls include: inspections, reviews, assessments, monitoring and measurement.

A.9.5.17 Reviews

SmartBay shall review projects with contractors at pre-set stages and when thought necessary or as part of the management of change. Therefore, planning shall take into account the need for contract review with suppliers under contract.

A.9.5.18 Warranties and guarantees

Contractors are expected to provide warranties that not only comply with legal obligations but with the terms of the contract and which are intended to extend the quality objectives of SmartBay to the supplier. This is to ensure that contractors provide the same quality service to the principal whilst under contract to the extent of guaranteeing performance of products and quality of service to an agreed extent.

In certain cases an amount of the payment may be retained in escrow until the guarantee period has expired. Such arrangements should be agreed prior to engagements and documented in the contract.

A.9.5.19 Insurance

Contractors are required to carry third party damage, employers and public liability insurance with evidence of this being provided as part of the tender response.

Project managers shall ask for copies of current insurance certificates for the records.

A.9.5.20 Emergency Planning

Contractors working on sites managed by SmartBay shall be required to comply with the organization emergency plans.

Emergency plans may need to be reviewed to take into account the particular contingencies that may arise out of the contractors work, in which case special emergency plans shall be agreed and exercised and records maintained. It may be necessary to develop and disseminate a “bridging document”.

Reference to Section A.10 Emergency Response Planning

A.9.5.21 Terms and Conditions

SmartBay terms and conditions apply to clients in all contracts.

Contractors and suppliers will insist on their Terms and Conditions being applied, however these should be carefully reviewed and amended as required. Such amendments shall be fully documented and signed off to avoid confusion if applied at a later date.

A.9.5.22 Limits of liabilities

Some contractors may try to limit their liability via their terms and conditions. It is therefore important that SmartBay review contractors and suppliers terms and condition prior to a contract being agreed.
SmartBay shall review limitations of liabilities when contracting with companies for shipping, transport and warehousing and other logistics services.

A.9.5.23 Supplier assessment and approval

SmartBay maintains a register of approved contractors and suppliers.

In an emergency a dynamic Risk Assessment of a new supplier is acceptable provided there is evidence of some appraisal of the possible impact and likelihood of failure and how it would affect the contract.

A.9.6 Control of nonconforming outputs, service or product

Note: Interacts with Sections A.12 and B.10

SmartBay ensures that process outputs, products and services that do not conform to requirements are identified and controlled to prevent their unintended use or delivery.

SmartBay procedures include sections that provide specific requirements for when nonconformities are identified. As applicable SmartBay procedures address nonconforming process outputs, products and services in one or more of the following ways:

a) Corrective actions.
b) Segregation, containment, return or suspension of provision of products and services.
c) Informing principles or the client.
d) Determine corrective actions or,
e) Obtain authorization for:
   • Use “as is”.
   • Release, continuation or re-provision of the products and services.
   • Acceptance under concession.
f) Where nonconforming process outputs, products and services are corrected, the procedures employed shall be verified.
g) Retain documented information of actions taken on nonconforming process outputs, products and services, including any of the concessions obtained, and on the person or authority that made the decision regarding the nonconformity;
h) investigate, document and record the circumstances of the non-conformity and review the potential impacts on the client, business, safety, and/or the environment.

See also Section B.10

Interacts with Section: A.12 Improvement

SECTION A.10: Emergency preparedness and response

A.10.1 General requirements of the Emergency Response Plan (ERP)

In accordance with statutory maritime regulations SmartBay has developed an “Emergency Response Plan” in accordance with the Offshore Renewable Energy Installations (OREI) guidelines.

SmartBay has prepared and revises, as appropriate, adequate plans and procedures to be taken in the case of an emergency or serious imminent danger including medical emergencies and actions to assist others in distress.

In developing, maintaining and improving Emergency Response Plans SmartBay takes into account the following explicit duties in addition to general duties:

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• Establishing procedures in the event of serious and imminent danger to persons during emergency response – taking into account the balance of risk in saving life.
• Nominating sufficient number of competent persons to implement those procedures.
• Restricting employee access to danger area.
• Informing persons exposed to serious and imminent danger as to nature of the hazard and steps taken/to be taken to protect them from it.
• Enable persons to stop work and immediately proceed to a place of safety in the event of their being exposed to serious, imminent and unavoidable danger.
• Prevent persons from resuming work in any situation where there is still a serious and imminent danger following an emergency incident.
• Implement dynamic Risk Assessment when considering emergency actions.
• Reviewing or assessing residual risk following any Emergency situation
• Ensuring any necessary contacts with external emergency services are arranged, particularly as regards first-aid, emergency medical care and rescue work.

The Emergency Response Plan is required to address specific regulatory requirements and/or the findings of Risk Assessments performed, include, but are not limited to:
• Confined Spaces (including Entry to Enclosed Spaces).
• Construction, installation, maintenance activities.
• Electrical repair installation, repair, maintenance and decommissioning.
• Diving.
• Fire.
• Hazardous substances.
• Lifting operations.
• Marine personnel transfer.
• Vessels.
• Working at height.
• Man Over Board (Unintentionally).

The Emergency Response Plan shall be maintained in an up to date form including the internal and external emergency response contact details (landline, mobile telephone, email address and alternative numbers).

External contact details shall include:
• Gardaí / Fire & Rescue / Coast Guard.
• Local affiliated rescue services.
• Marine Rescue Co-ordination Centre (MRCC).
• Harbour Masters.
• Salvage / Towing / workboat contractors.
• Diving companies.
• Oil / Chemical spillage emergency responders.

A.10.2 Fire Prevention Policy

A Fire Risk Assessment must be conducted on the potential fire risks and controls implemented to reduce or eliminate the risks from fire; an example is the storage of flammable chemicals, gases and appliances. Fire Risk Assessments should be documented and reviewed at least annually or when there is a change in the type of flammable materials, potential sources of ignition and storage facilities.
The risks of a fire occurring on SmartBay premises is considered low taking into account the following preventive procedures:

- Flammable liquids, including petrol, in containers in excess of 5 litres shall not be stored on the premises, other than for purpose of holding emergency fuel for the portable generator and jet washer.
- No container shall exceed 10 litres stated capacity and in total not more than 20 litres.
- Petrol controls shall be outside buildings in a secure steel locker segregated from other hazardous and flammable substances.
- There will be proper waste receptacles and these will be emptied on a daily basis.
- All electrical equipment conforms to ETCI guidance and is certified and maintained as such.
- All employees have received basic training on fire prevention.

In the workshop Hot Work may arise occasionally from construction or maintenance activities. Hot Work is work that might generate enough heat, sparks or flame to cause a fire. Hot Work includes welding, flame cutting, soldering, brazing, grinding and other equipment incorporating a flame, e.g. tar boilers, etc. Hot Work can be very dangerous and stringent controls must be in place:

- All hot work identified.
- Hot work is allowed only if no satisfactory alternative exists.
- When applicable, relevant contractors must be are aware of hot work procedures and controls.
- A Permit to Work is required as well as other measures:
  - Fire-resistant protective clothing.
  - Clear responsibility.
  - Logging and audit process.
  - Routine checking and supervision.
  - Removal of item to be worked on to a safe area.
  - Removal or protection of combustible or flammable materials.
  - Prevention, suppression and control of sparks.
  - Prevention, suppression and control of heat.
  - Provision of (and training on) suitable firefighting equipment.
  - Provision of a separate person to fire-watch and use firefighting equipment – the Fire-Watcher.
  - Particular precautions for special risks, e.g. confined space.
  - Appropriate tidying up of workspace.
  - Final check of area at least 60 minutes after completion of job and certainly prior to premises being vacated.
A.10.3 Emergency Response Team

In the case of a serious incident the senior person on site shall immediately convene the Emergency response team who will act to resolve the incident and mitigate any further effects.

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<td>Operations and Technical Manager</td>
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<tr>
<td>Designated Person</td>
<td>Operations &amp; Technical Manager</td>
<td>Senior Project Manager</td>
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<tr>
<td>Project Coordinator</td>
<td>Safety Officer</td>
<td>Fire Officer</td>
</tr>
<tr>
<td>External Telephones</td>
<td>Administrator</td>
<td>Senior Software Developer</td>
</tr>
<tr>
<td>Internal Communications</td>
<td>Strategic Funding and Project Coordinator</td>
<td>Senior Software Developer</td>
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A.10.4 Next of Kin contacts

SmartBay maintains a list of all employee’s next of kin. SmartBay requests confirmation of Next of Kin for all persons travelling on charter boats including those of contractors and all other visitors. This is important because next of kin must be informed in the case of injured or missing persons, or to advise the police in case of a fatality. Next of kin data is also vital in case medical records are required or if hospitals need to speak to the next of kin. It is also vital that next of kin is kept informed of developments in the case of persons missing at sea or in danger. This is usually the role of the Police liaison officer.

A.10.5 Emergency Response facilities

SmartBay has designated the “meeting room” in the main office as the Emergency Response Room.

When a serious incident has been declared the Emergency Response Team convenes in the meeting room from where the emergency response will be coordinated.

The General Manager ensures that all the necessary resources likely to be required in an emergency, including:

- Room, telephones, fax, email, conference communications, and
- Maps, charts, device information, skills matrix, vessel information.

The Operations and Technical Manager shall ensure that the latest site GIS mapping providing precise device and cable information.

A.10.6 Emergency Response actions

See Appendix 1 – Emergency Response Plan.

SmartBay has set out emergency procedures in Appendix 1.

If an emergency occurs things should work very quickly. People should not delay in removing the source of danger, assessing the nature of the incident, calling for assistance including ambulance, fire services or other emergency services.

SmartBay has identified a number of potential types of emergency and developed checklists to assist in the control, coordination and resolution of the emergency.
Emergency Actions should not result in further risks to personnel and the environment. To meet these aims it is vital that personnel are trained, drilled and exercised in the emergency response actions.

Disorganization results in delay. An individual with a heart attack or stroke for example needs paramedic attention as soon as possible and be in hospital within an hour, often referred to as the “golden hour”.

A technician falling into the sea willquick succumb to hypothermia if not recovered quickly. A man overboard may have suffered injuries and will probably be suffering from shock. It is vital therefore to recover the person as soon as possible and at the same time transmitting a “Distress” message on the VHF radio. The Coastguards will activate the appropriate emergency response.

NEVER WORRY ABOUT CALLING THE COASTGUARDS – IT IS THE RIGHT THING TO DO!

A.10.7 Use of Checklists

The person in charge of the Emergency Response Team should use the appropriate checklist(s) to ensure that in the heat of the moment vital steps are not overlooked.

Emergency checklists must be tested and reviewed during and after drills, exercises and when discussed at HSEQ Monthly Review meetings.

Emergency checklists are developed around potential emergency scenarios which are reviewed and amended following: drills and exercises, when incidents have occurred, receipt of regulatory updates, analysis of accident reports in the media or from industry bodies.

When changes are made to the checklists, document control applies and the latest versions are printed for use in the Emergency Response Room. Other copies are maintained on the common drive.

Members of the Emergency Response Team should have instant access to the ERP and emergency checklists via laptops or tablets in the event they have to deal with the event remotely.

A.10.8 Risk Assessment and Risk Management

SmartBay analyzes potential emergency scenarios as part of the organization’s risk management processes. A review of the analysis of potential hazards or circumstances that could lead to an emergency may provide opportunities to prevent an incident or at least mitigate the consequences through both improved preparedness and response actions.

When assessing the controls to eliminate or reduce risk where the consequences might lead to an emergency the findings are applied to both the Method Statement and the emergency contingency plans respectively thus the safe systems of work encourage should become effective in mitigating risk as part of the HSEQ lifecycle. See Section A.6

A.10.8.1 Occupational Health and Safety Risks for Responders

Emergency responders will use their best endeavours to reach a casualty at sea to offer assistance. Whilst the SmartBay operations are carried out when the weather is good and forecasts are favourable nevertheless circumstances might change and the nature of the emergency may make transfers, rescue or other actions more risky for both responder and the casualty.

Drills and exercises will have highlighted some of the issues and these are reflected in the ERP.
Responders are usually very experienced however the boat Master and the SmartBay shore based Emergency Response Team should work together to minimise the risks to all personnel.

Whilst the boat Master has overriding authority he / she should work closely with the lifeboat coxswain or helicopter winchman to achieve the best and safest outcome.

A.10.9 Risk Mitigation

In emergency situations there are often hazardous situations to deal with and this is why training is important. Whilst it is inevitable that some additional risk scenarios arise, the controls already in place combined with the preparedness training to mean that the possible consequences arising from the additional risks are mitigated. An example of this might be to isolate electrical cabling or appliances before attending to a person suspected of being electrocuted or making time to conduct a roll call before evacuating a work boat, the wearing of lifejackets before leaving transferring to a life raft, or not using a water fire extinguisher on an electrical fire.

It is important to the risk management process that drills, exercises and incidents, including near-miss investigation reports, are fully reviewed and analyzed to ensure that lessons can be identified and the learning translated into improvements in routine operations and emergency contingency planning.

The management should ensure that the HSEQ Monthly Review is used to ensure full participation from personnel at all levels.

Improvements should be implemented through the HSEQ amendment and management of change processes including the identification of training needs.

Such reviews should be documented and records kept.

A.10.10 Media Management

It is vital that the important work of the Emergency Response Team is allowed to function without distraction and that resources are focussed on resolving the emergency.

When necessary the Gardai will provide early liaison with next of kin supported by the General Manager. Relatives should not learn personal information during an accident from the media first.

SmartBay and the Marine Institute have a set media policy and will co-operate with the emergency services in controlling information given to the media.

It is vital that a person skilled in managing the telephone to ensure that calls from personnel involved in the incident, Coastguards, authorities, first responders and hospitals are put through without delay and that media calls are filtered. In some scenarios anxious relatives might call and these should be dealt with sympathetically and dealt with in liaison with the person in charge of the emergency response team or the Police liaison officer.

It is important that company personnel do not post to social media during an incident as this can cause undue stress especially to relatives and could prejudice a successful outcome to the crisis.

Persons assigned to telephone duty should have undergone training in managing the media.

A.10.11 Training, Drills and Exercises

A.10.11.1 General

Training, drills and exercises are particularly important aspects of Emergency Preparedness.

It is important that all personnel are trained, drilled and exercised in the potential likely emergency scenarios. Contingency planning is vital and training is an important part of this planning.
It is therefore important that contingency scenarios are credible, realistic and managed imaginatively.

An example of this is the “man-overboard” scenario. Whilst boarding a data buoy from a RIB the technician slips and falls into the water. It is important therefore that the personnel in the boat know exactly what is expected of them in recovering the person, dealing with shock, safeguarding against hypothermia and checking for injuries and knowing when to radio for assistance.

Only by holding drills and exercises can the issues with this type of scenario be fully understood, especially recovering a relatively heavy person who may be unconscious from the sea into the boat. The difficulties associated with recovering a person from the sea are often understated but soon learned during training in simulated conditions.

It is important that the risks associated with individual scenarios and for the individual persons we are trying to protect.

A “Live Exercise” should be arranged with the RNLI by way of a joint exercise on an annual basis and where possible to involve other responders or stakeholders such as the Harbour Master.

See Section C: Hazards and Activities.

See training needs appraisals Section A.8.4.5 and B.8.8.

A.10.11.2 Emergency preparedness

SmartBay has identified emergency preparedness training needs. It is important to understand that these needs will expand as experience in contingency planning is gained through participation in live exercises and from the investigation, analysis and review of real time incidents, especially “near miss” events.

SmartBay has developed an electronic drills & exercises matrix which requires training to take place within a small window centred around a time line. The date of the drill or exercise is logged.

After each drill the Safety Officer will review the results with the participants. It is vital that the Safety Officer analyzes the results and sets new objectives. Findings of Drills and Exercises highlight lessons to be learned are discussed at HSEQ Monthly Review Meetings and the effectiveness of remedial actions reviewed at the HSEQ Quarterly Review Meetings. In some cases the drill or exercises shall be repeated to ensure corrective actions have been effective.

For example: if an evacuation of the main building took too long and someone had stayed back to check his emails, or the roll call was not carried out immediately then these need attention and remedial actions are set as set as objectives and the drill repeated within a set time scale and the results verified and the effectiveness not assumed until after the next scheduled drill and the issue “closed out”.

If the issues demonstrate an adverse trend the matter is to be discussed at the next HSEQ Monthly Review. Effectiveness of training, drills and exercises are reviewed at the next HSEQ Quarterly Review

Records are maintained of all drills & exercises, their reviews and of verifications.

A.10.11.3 Communications

A vital aspect of any emergency is communication.

Personnel should be trained in aspects of communications relevant to their roles and responsibilities and all personnel should be trained, drilled and exercised in emergency communications.
Training in emergency communications will vary according to their responsibilities however ALL persons need to know who to alert, to whom to report and the forwarding of instructions and information.

**Fig: A.10.11.3.1**

<table>
<thead>
<tr>
<th>Category of Personnel</th>
<th>Communications Training Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine assignees</td>
<td>Use of VHF radios [RYA Short Range (SR) and Digital Selective Calling (DSC) training course] including making distress calls and communications with first responders and authorities. Relaying distress messages. Communicating with Search and Rescue agencies including the DTTAS Marine Rescue Coordination Centre.</td>
</tr>
<tr>
<td>Management</td>
<td>see Response Team.</td>
</tr>
<tr>
<td>Technicians ashore</td>
<td>Alerting personnel, activating alarms, reporting accidents and incidents. Requesting ambulance and fire services.</td>
</tr>
<tr>
<td>All Personnel</td>
<td>Raising the alarm, alerting personnel, activating alarms, reporting emergencies, requesting appropriate emergency services. Importance of responding promptly to instructions from emergency services officers and to the Emergency Response</td>
</tr>
<tr>
<td>Visitors</td>
<td>Induction – reporting fires, accidents, illnesses, and hazards.</td>
</tr>
</tbody>
</table>

With the exception of marine VHF training, training can be conducted internally “in-house”, for example following a drill or exercise or at separate sessions or following HSEQ Monthly Review Meetings.

SmartBay keeps records of instructional training, drills and exercises.

**A.10.11.4 Media management training**

SmartBay trains all employees in its media policy.

Senior management who form the core of the Emergency Response Team should take part in an in-house emergency actions workshop based on a selection of scenarios from the Emergency Response Plan whilst integrating simulated media enquiries and intrusion and testing the SmartBay Media Policy.

Records are be kept of all training.

**A.10.11.5 Monitoring, reviews and improvements of the Emergency Response Plan**

SmartBay Safety Officer shall ensure that actions and processes associated with the Emergency Response Plan are monitored, reviewed and any opportunities for improvement taken up.

Were non-conformities are identified the causes should be determined, analyzed and corrective measures implemented including those intended to prevent recurrence. ERP opportunities for improvement, non-conformities and corrective actions are discussed in open forum at the HSEQ Monthly Review Meetings which are minuted for the record.
Corrective and preventive actions are monitored, assessed and reviewed for their effectiveness. The effectiveness of the SmartBay Emergency Response Plan is assessed at the HSEQ Quarterly Management Review meetings.

Records are kept of all corrective, preventive actions and reviews.

A.10.11.6 Management of change

Any changes made to the documented Emergency Response Plan shall be implemented under the Smart Bay HSEQ SMS Management of Changed “Management of Change” processes – See Section A.9.3 Management of Change

A.10.12 Relevant best practice

SmartBay consults best practice from accredited sources. Guidelines are to be found in renewables industry publications. Relevant accident investigation reports from the Ireland Marine Accident Investigation Board, the UK Marine Accident Investigation Branch, the Irish Health & Safety Authority and the UK Health and Safety Executive Approved Codes of Practice and Guidelines are also reviewed.

See HSEQ References Section A.2

A.10.13 Additional considerations including MAYDAY Relay

During any incident either where SmartBay is directly involved or when SmartBay personnel are requested to provide assistance in an emergency or asked to relay distress information the SmartBay Emergency Response Team should convene to maximise the support given to the emergency response agencies.

Information received or overheard on the VHF or from personnel near the scene that could assist first responders should be passed on to the person coordinating response activities e.g. Coastguards, Harbour Masters or vessels leading the Search and Rescue response.

Examples could include: when a weak distress message is received from a person in a small boat which is awash, or from persons in the water, is received by a SmartBay workboat, perhaps in the same area, this message should be relayed without delay by VHF and again by Mobile Phone if in range to 999 Police or Coastguard. This procedure is known as “Mayday Relay”. Do not assume that a Mayday message has been heard by parties who may be much further away. VHF range is affected by antennae height and local land and cliffs. Always acknowledging receipt of any distress message and the opportunity is taken to gather as much information as possible about the emergency from the persons in distress. This information can then be relayed again.

A.10.14 Legislation and Standards

SmartBay shall comply with all relevant legislation, regulations and approved codes of practice.

There is a legal requirement for employers to take account of employees’ capabilities in relation to health and safety, and to provide adequate health and safety training which includes new employee emergency preparedness induction when initially recruited and thereafter when they are exposed to new or increased risks. This may arise from changes in their role, or in the work equipment, technologies or systems in use, and this training should be repeated periodically where appropriate. This is particularly relevant to skills that may only be occasionally used; for example, in an emergency, it is vital that every employee is competent to fulfil their responsibilities even though such situations should not be frequent occurrences.

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A.10.15 First Aid and emergencies

Persons assigned the role of First Aider should assess the nature and extent of any injuries and administer immediate first aid including, but not limited to (*inter alia*):

- CPR.
- Use of defibrillator (if available).
- Stopping or least reducing any bleeding especially arterial bleeding.
- Removing sources of danger with assistance of others.
- Advising other employees on handling of the injured person.
- Treating symptoms of shock.
- Management of hypothermia.
- Monitoring condition and communicating signs and symptoms to first responders such as paramedics, lifeboat crew, coastguards depending on the circumstances.
- Reassuring the injured person.

SmartBay First Aiders should not be afraid of any repercussions or liability arising as a consequence of their using their best endeavours to save a life or treat life changing injuries prior to the arrival of medical professionals.

A.10.16 Breathalysing and or testing for Drugs and Alcohol

SmartBay must ensure that all personnel understand that following any serious accident or dangerous occurrences the authorities are likely to require drugs and alcohol testing of those directly involved in the incident.

Reference is made to the SmartBay “Employees Handbook”.

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A.10.17 Post Emergency Actions

Following an emergency incident SmartBay undertakes Port Emergency Actions:

<table>
<thead>
<tr>
<th>Item</th>
<th>Post Emergency Actions</th>
</tr>
</thead>
</table>
| 1.   | **Investigation**  
It is a legal requirement for emergencies to be thoroughly investigated and the findings documented and disseminated so that lesions can be learned.                                                                                                                                                        |
| 2.   | **Feedback**  
It is important that SmartBay take into account feedback from employees, contractors, authorities and responders.                                                                                                                                                                               |
| 3.   | **Root Cause Analysis**  
The investigation process uses root cause analysis techniques to identify the underlying causes in order that preventative action can be determined.                                                                                                                                                     |
| 4.   | **Corrective Action**  
Corrective actions are implemented as soon as possible with care being taken not to delay actions unduly because of any ongoing investigation, nevertheless it is important to gather evidence and information required so that lessons can be learned e.g. replacing a broken shackle or parted mooring rope. |
| 5.   | **Dissemination, Communication and Participation**  
It is important that findings and lessons learned are communicated to personnel and other stakeholders so that there is an opportunity for consultation and participation. Include in HSEQ Monthly Review Meeting, bi weekly operational and HSEQ Quarterly Review meetings and by Safety Alert communications. |
| 6.   | **Preventive Actions - Opportunities**  
Preventative actions are those actions intended to prevent recurrence and are usually identified during the root cause analysis process when the underlying causes and their interactions are identified e.g. Improvements in maintenance and inspection routines, or improvements buoy mooring systems. Interacts with Management of Change. |
| 7.   | **Morale & Counselling**  
Where the workplace is disrupted by an emergency and especially so if persons are injured or there has been a fatality, morale is adversely affected and it is necessary offer counselling and seek appropriate ways to lift morale. |
| 8.   | **Mentoring**  
Following an emergency involving “human factors” it is usually necessary to mentor involved or affected by the emergency. Typical aspects might include training needs and issues concerning impairment.                                                                                     |
| 9.   | **Medical & Psychological care**  
SmartBay shall ensure that any medical conditions and post traumatic effects are appropriately monitored and adequate human resources applied. Plans should be devised to provide support and agreed rehabilitation pathways back into the workplace environment. See “Employees Handbook”. |
| 10.  | **“Just Culture”**  
Personnel are encouraged to report the circumstances leading up to the emergency or to recall any previous relevant dangerous occurrences without fear of retribution. Whilst it may be subsequently become necessary to invoke |
Safety Management System

disciplinary action, staff should be encouraged to describe their experiences.

<table>
<thead>
<tr>
<th>11. Training, drills and exercise reviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training needs should be reviewed after any emergency to identify how training might help to make preventative actions more effective.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>12. Restoration</th>
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</thead>
<tbody>
<tr>
<td>It is very important to ensure that damage is repaired and systems restored and any vital spares, critical equipment including safety gear and PPE are fully restored, e.g. fire extinguished serviced, recharged, or replaced, and returned to service.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartBay prepare reports for use by Management and stakeholders. SmartBay are required to comply with statutory accident reporting regulations when circumstances meet the reporting requirements.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>The implementation of corrective and preventive measures are monitored to ensure effectiveness. Interacts with Management of Change.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15. Auditing</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartBay should conduct additional verification audits or if the timing is appropriate ensure that preventive measures related to systems associated with the activities or infrastructure elements involved in the emergency are functioning effectively and any weaknesses identified and acted upon.</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>16. Records</th>
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</thead>
<tbody>
<tr>
<td>Records of the Emergency shall be kept including, the original alerts / notification, emergency response, and post emergency actions.</td>
</tr>
</tbody>
</table>

A.10.18 Relevance to Project - Key Lifecycle Phases

The risks to people, and the number of people exposed, will both vary over the lifecycle of a project, as will the level of support available from SmartBay, contractors, authorities and other project stakeholders; a typical pattern could be:

- During construction (ashore, at sea and on the marine test site).
- During deployment.
- During commissioning.
- During operations and maintenance.
- During decommissioning (including on the test site, at sea and ashore).

For the above SmartBay identify the particular hazards associated with each stage in the offshore renewable energy project lifecycle and after Risk Assessment controls applied to the MethodStatement. SmartBay identify the potential emergency scenarios and ensure that the Emergency Response Plan provides for the response and mitigation of any emergency that might occur during each of the stages.

See Section C. HAZARDS AND ACTIVITIES.

An example might be “Man overboard” during commissioning a data buoy on the test site.

A.10.19 Regulations

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</table>
Regulations require SmartBay to hold emergency drills and exercises. SmartBay devise and display a schedule for Emergency Drills & Exercises for both:

1. Shore Based - Fire and Evacuation, Injured Person and Medical Emergency – See Section C

The Fire Drill ashore should be conducted in line with current Fire Services Act Regulations.

**A.10.20 Marine Incident Reporting, assisting police and coast guards**

SmartBay are required by law to *(inter alia)*:

Immediately Report Emergencies to the Coast Guards (MRCC) to ensure SAR resources can be mobilized at the earliest opportunity.

Report all marine accidents and incidents of pollution to:

a) Marine Casualty Investigation Branch.
b) DTTAS Marine Survey Office.

See also A.12.2 Incident Reporting.

SmartBay shall comply with instructions from Irish Coast Guards, Police, MCIB investigators and officials from the Marine Survey Office, both during and after an Emergency.

**A.10.21 Records**

SmartBay maintains records of all emergencies for an indefinite period including all communications relating to actions taken during the emergency and with the authorities and other stakeholders.

See EMERGENCY RESPONSE PLAN: Annex 1.
SECTION A.11: Performance evaluation

A.11.1 Monitoring, measurement, analysis and evaluation

The HSEQ Management System provides methods by which key elements of the processes and outputs are performance evaluated for the purpose of maintaining compliance and for improvement. These methods or tools are specified in the relevant procedures, including:

- Identification of the particular processes or items that require monitoring and measuring.
- The methods used for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results.
- When the monitoring and measurement shall be performed and which should include measurement at predetermined stages as part of the project management process.

Administrative and support functions are reviewed evaluated periodically.

Occupational health and safety is monitored on an on-going basis with performance data analyzed and evaluated at HSEQ Quarterly Meetings using input data from any or all of the following sources:

- HSEQ Monthly Review feedback data as an input, and at any time following an accident, incident or near miss.
- Stakeholder complaints or external reports of noncompliance.
- Statistical information derived from “Key Performance Indicators” e.g. LTI (Lost Time Injury data).

Environmental protection performance data is reviewed and evaluated at the HSEQ Quarterly Review Meetings.

Environmental Aspects are reviewed annually, however any incidents or changes that have had an effect on significances and where controls need to be reviewed then the HSEQ designated person is to assess the potential impact on compliance.

See: HSEQ Management Review agenda Form

A.11.2 Customer satisfaction

(ISO 9001:2015 9.1.2)

SmartBay monitors customer perceptions to the extent that customer services have been met.

Information relating to customer satisfaction is gathered in a number of ways including:

- Customer complaints.
- Litigation.
- Cancellation of projects due to inadequate performance.
- Repeat business.
- Customer payment performance.
- Reviews of customer feedback.

Project managers periodically evaluate current progress with contracts and identify any potential causes of failure and their likelihood and determine what action to take to prevent failure that might lead to customer dissatisfaction. An action plan is devised and implemented.

Methods of measuring project performance internally include (inter alia):

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</table>
• Monitoring progress against agreed plans.
• Self assessment – Key Performance Indicators, monitoring and review.
• Benchmarking where appropriate.
• Evaluating views of colleagues and progress reports.
• Evaluating changing circumstances, weather, supplier issues and any other factor that might affect delivery of a successful project or task and report to the customer and at the same time providing solutions and reappraisal of the issues, “keeping the customer informed”.

The Project Manager seeks opportunities to improve the current status and avoid dissatisfaction by improving on methods and resource deployment.

Any action taken is monitored, measured and evaluated for effectiveness.

Customers are kept informed of any changes in circumstances that could affect output and delivery of a successful outcome.

A.11.3 Analysis and evaluation

(ISO 9001 2015 9.1.3)

SmartBay analyzes and evaluates appropriate data and data arising from monitoring and measurement and other sources to monitor HSEQ Management System performance and to ensure compliance with the Standards and legal requirements and the identify needs and opportunities for improvement:

Evaluation data is used as inputs to HSEQ Quarterly Management Review meetings and to ensure that HSEQ Monthly Review management information and feedback is sufficient and relevant.

The methods extent and frequency of analysis and evaluation depends upon the area of the business and the type of project and associated plans and expectations. Guidance on the purpose and use of performance data is provided here:

Guidance on the use of outputs from analysis and evaluation:

a) Demonstrate conformity of products and services meet requirements, including customer requirements, technical specifications and legal compliance.
b) Assess and enhance customer satisfaction (see also A.11.2).
c) Ensure conformity and effectiveness of the HSEQ Management System.
d) Tracking progress on meeting HSEQ Policy commitments, achieving objectives and targets, and continual improvements.
e) Monitoring exposures (vulnerabilities to external influences) to determine whether applicable legal and other requirements to which SmartBay has subscribed are met.
f) Monitoring incidents, injuries and ill health, environmental incidents and potential effects of change, including status and trends.
g) Providing data to evaluate the effectiveness of operational controls, or to evaluate the need to modify or introduce new controls (See A.9.1 Operational Planning and Control).
h) Provide data that can be used to proactively and reactively measure OHS and Environmental performance.
i) Demonstrate that planning has been successfully implemented.
j) Assess the performance of processes.
k) Assess the performance of suppliers.
l) Determine the need or opportunities for improvements within the HSEQ Management System.
m) Providing data for evaluation of competence and training needs.
The results of analysis and evaluation shall also be used to provide inputs to HSEQ Management Reviews.

Records are kept of monitoring, measurement and evaluation.

A.11.4 Evaluation of statutory compliance

(OHSAS 18001:2007; ISO 14001:2004; ISO PC 45001 9.1.2)

SmartBay periodically¹ evaluates compliance with applicable legal requirements.

Relevant evaluations of legal compliance are conducted when (inter alia):

.1 Planning changes to the HSEQ Management System.
.2 Planning new projects.
.3 Reviewing projects.
.4 Developing or reviewing:
   a) Risk Assessments.
   b) Permits To Work.
   c) Method Statements.
   d) Operational procedures.
   e) Tender responses.
.5 Identifying or assessing environmental aspects.
.6 Reviewing the work environment including welfare facilities.
.7 Procurement of equipment.
.8 Reviewing emergency plans.
.9 Reviewing reporting and investigation procedures.
.10 Preparing audit plans.
.11 Training needs and appraisals
.12 Employers liability insurance, public liability and general insurances.

Following any review of legal compliance the “Legal Register”² shall be updated.

Note¹: The frequency of periodic evaluation may vary for differing requirements to which SmartBay subscribes.

Note²: The Legal Register is a list of the principal applicable legislation, codes and guidelines which is updated during the development and review of the HSEQ Management System.

SmartBay keeps records of evaluations. These may take a variety of forms including: evidence of research (referencing) updates of the Legal Register, project planning documents and HSEQ Management Reviews, or as an apparent result of an investigation.

A.11.5 Internal audit

The purpose of the internal audit is to verify compliance with the Certificate HSEQ Management System and the Standards an organization subscribes to.

A.11.5.1 Internal audit objectives

SmartBay conducts internal audits at planned intervals to provide information on the effectiveness of the HSEQ Management System.

a) The audit will confirm whether or not the Safety Management System conforms to:
   1) The SmartBay requirements for the Safety Management System.
   2) The requirements of the relevant International Standards.
   3) Client and stakeholder requirements.
b) An effectively implemented and maintained system.

**A.11.5.2 Internal audit process**

SmartBay conducts audits on a systematic basis in line with the following process:

<table>
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<tr>
<th>Audit Stages</th>
<th>Actions</th>
<th>Functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audit Planning</td>
<td>Determines frequency</td>
<td>Certificate Cycle</td>
</tr>
<tr>
<td>Audit Programme</td>
<td>Confirms Scope</td>
<td>Audit Schedule</td>
</tr>
<tr>
<td>Audit Plan</td>
<td>Reviews audit criteria</td>
<td>Audit Planning Form</td>
</tr>
<tr>
<td>Responsibilities</td>
<td>Auditor / Audit Team</td>
<td>Selection</td>
</tr>
<tr>
<td>Competencies</td>
<td>Review Auditor Training</td>
<td>Training Records</td>
</tr>
<tr>
<td>Safety Objectives</td>
<td>Evaluates Safe Practices</td>
<td>Risk management</td>
</tr>
<tr>
<td>Quality Objectives</td>
<td>Customer Focus</td>
<td>Quality of processes</td>
</tr>
<tr>
<td>Environmental Objectives</td>
<td>Environmental Aspects</td>
<td>Management of Aspects</td>
</tr>
<tr>
<td>Audit Notifications</td>
<td>Arranging dates / programmes</td>
<td>Opening/Closing Meetings</td>
</tr>
<tr>
<td>Opening Meeting</td>
<td>Agenda – audit arrangements</td>
<td>Arranging audit days(s)</td>
</tr>
<tr>
<td>Document Review</td>
<td>Auditor reviews documents</td>
<td>Decides processes to audit</td>
</tr>
<tr>
<td>Processes</td>
<td>Auditor follows processes</td>
<td>Applies audit trail techniques</td>
</tr>
<tr>
<td>Interviews</td>
<td>Interviews key personnel</td>
<td>Personnel related to processes</td>
</tr>
<tr>
<td>Objective Evidence</td>
<td>Verifies evidence</td>
<td>Documents, records, reports</td>
</tr>
<tr>
<td>Assessment of Evidence</td>
<td>Analysis &amp; Evaluation</td>
<td>Audit reports, HSEQ reviews</td>
</tr>
<tr>
<td>Report findings to HSEQ DP</td>
<td>Audit reports, review records</td>
<td></td>
</tr>
<tr>
<td>Non Conformance Reports</td>
<td>Requires one CA – (Corrective Action) Form per NC</td>
<td>CA Form</td>
</tr>
<tr>
<td>Determine Corrective Actions</td>
<td>Initiate CA Form</td>
<td>Agree “close out” date(s)</td>
</tr>
<tr>
<td>Determine Preventive Action</td>
<td>Completes CA Forms</td>
<td>Agree “close out” date(s)</td>
</tr>
<tr>
<td>Closing Meetings</td>
<td>Agenda - Summarizing Findings</td>
<td>Audit records</td>
</tr>
<tr>
<td>Audit Report</td>
<td>Discuss Audit Report at Closing Meeting</td>
<td>Agree on action dates</td>
</tr>
<tr>
<td>Audit records</td>
<td>Retain as evidence of audit</td>
<td>Consult at next audit</td>
</tr>
<tr>
<td>Monitor Audit Actions</td>
<td>Monitor close out progress</td>
<td>Expedite close-outs</td>
</tr>
<tr>
<td>Audit “Follow-up”</td>
<td>Verify close out evidence</td>
<td>“Close out” actions against verifiable objective evidence,</td>
</tr>
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</table>

SmartBay internal audit procedures include the IT operations and system integrity including backup systems and data storage and security.

**A.11.5.3 Internal Audit Program**

Internal Audits may be conducted in parts providing the interactions are assessed and recorded in the audit notes.

Internal audit programs are:

- Planned so that the whole HSEQ management System is fully audited at least 3 months prior to the external certification or surveillance audits. This is to give time for the implementation of any Corrective Actions or modifications and for the necessary “close out” procedures to be effected.
Regardless of the area under audit certain elements are always relevant. These are highlighted in the Audit Checklist. Example of this include “Document Control”, “Records” and “Non-conformity, corrective and preventive actions” *inter alia*.

### A.11.6 HSEQ Management review

*The Management shall review the topics listed in ISO/DIS 9001:2015 9.3 a) – f)*

SmartBay has developed procedures for conducting management reviews of the HSEQ at planned intervals of not more than 3 months, to ensure its continuing suitability, adequacy and effectiveness of the HSEQ SMS. This review shall include assessing opportunities for improvement and the need for changes to the HSEQ Management System, including policies and objectives.

#### A.11.6.1 HSEQ MS Quarterly Management Review Agenda

SmartBay has developed a documented agenda which serves as the notice and report. The format can be expanded to include additional items. The primary purpose of the HSEQ review is to evaluate the effectiveness of the SMS taking into account objective evidence of system performance.

Attendees should include:

- General Manager.
- Designated person (Operations and Technical Manager).
- Safety Officer (Project Coordinator and Administrator).
- Senior Project Manager.
- Others – at the discretion of the chairperson depending on agenda focus or events.

Review Inputs and outputs include (*inter alia)*:

1. Chairpersons opening remarks.
2. Executive review of HSEQ SMS including significant matters arising from HSEQ Monthly Review Meetings.
3. HSEQ Incidents, accidents and “near miss” reports.
4. Environmental aspects – new or revised.
5. Audit findings.
6. Drills and exercises – reviews of recent drills and exercises.
8. Operational issues – recent operation events, successes, difficulties and opportunities.
9. Organizational changes - changes in personnel, organization and business activities.
10. HSEQ Communications – amendments, new documents, internal and external communications.
11. HSEQ SMS performance – evidence of improvement.
12. HSEQ – objectives, targets performance and reviews.
13. Legal compliance.
14. Legislative changes – including approved codes, standards, guidelines and regulations.
18. ISO / OHSAS Standards updates – planning for the future updates and opportunities.

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Chairpersons closing remarks.
Dates for next meeting.

The meeting transactions are documented and disseminated in order that managers and other personnel in order that outputs can be actioned. Persons assigned action should report back to the HSEQ Designated Person.

See HSEQ Quarterly Review Agenda form QRA01-2015.03.10.1

A.11.6.2 Actions

Actions requirements determined at the review meeting are itemized in the minutes. In certain circumstance a “Corrective Action Request” may be documented to ensure that sufficient focus is placed on the action.

The output from the management review shall include and decisions and actions related to:

.1 Improvement of the effectiveness of the Health, Safety, Environment and Quality Management System and its processes.
.2 Improvements in health, safety, and environmental management and the quality of Safe Systems of Work.
.3 Improvement of products and services related to customer and stakeholder requirements, and
.4 Resource needs, including human, fiscal and physical elements necessary to achieve the improvements identified in the review.

Any actions arising from the review meeting shall be implemented during the nominated time scale with the nominated person assigned responsibility for implementing the actions. The review meeting shall determine how the actions shall be monitored and measured for effectiveness and the reporting criteria. Actions captured from HSEQ monthly meetings, Quarterly Management review meetings and safety inspections are captured on the Master HSEQ Action list maintained by the project coordinator. A list of actions pertaining to Near Miss reports and Incident/Accident reports is also contained within the HSEQ Master Action List. This list is reviewed at both the HSEQ monthly meetings, Quarterly Management review meetings to monitor progress against close out targets.

A.11.6.3 Records

Records shall be kept of all HSEQ Quarterly Management Reviews including the details of outputs and post action follow-up reviews.

HSEQ Management Reviews are of particular interest during audits.

Note: Interactions SECTION A.12 Improvement
SECTION 12: Learning and Improvement

A.12.1 Incident Investigation, nonconformity, corrective and preventive action

SmartBay has developed and maintains procedures to record, investigate and analyze incidents and nonconformities in order to determine the underlying OH&S deficiencies and other factors that might be causing or contributing to the occurrence of incidents.

When an incident or nonconformity occurs, SmartBay:

a) Reacts to the incident, accident or nonconformity:
   - Reports the incident or nonconformity to the HSEQ designated person.
   - Investigates the circumstances.
   - Completes any requirement for statutory reporting.
   - Takes timely action to control and correct it.
   - Deals with the consequences.

b) Evaluates the need for corrective action to eliminate the causes of the incident or nonconformity, in order that it does not recur or occur elsewhere, by:
   - Reviewing the incident or nonconformity.
   - Analyzing the information from the investigation.
   - Determining the immediate and root causes of the incident or nonconformity.
   - Determine if similar incidents and nonconformities, or causes, exist, or could potentially occur.

c) Implement any action needed including corrective action (in accordance with Section Management of Change).

d) Review the effectiveness of any corrective or preventive actions taken.

e) Determine preventive actions intended to prevent recurrence.

f) Considers the need to review the identification of hazards and Risk Assessments.

g) Make changes to the HSEQ Management System if necessary.

h) Document and record all evidence (including images) retain reports and any information relating to follow-up actions and litigation.

The SmartBay General Manager ensures all that all reportable accidents are reported within 72 hours and that advice on remedial measures to prevent recurrence, and ensure that all injured personnel are promptly referred to a Doctor or hospital for treatment if required, taking action progressively:

- Preliminary assessments by own first aiders.
- Facilitating access to general practice doctors or clinics.
- Sending injured persons to A&E at a local hospital.
- Calling an ambulance & paramedics.
- Requesting medical advice via Coast Guards / RNLI using radio link-call.
- Requesting Air Ambulance / Irish Air Sea Rescue (IAMSAR) for rescue or medical evacuation.
- Follow Emergency Response Plan.

Actions taken during and after incidents, accidents (and during implementation of corrective and preventive actions relating to non-conformities) that are intended to prevent recurrence shall be recorded and their effectiveness reviewed to ensure effectiveness. Action target dates are set and

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Safety Management System

diarized and are ultimately reviewed at the HSEQ Quarterly Review Meetings to verify close-out. Incident Investigation, nonconformity, corrective and preventive action reports will be produced in a timely manner and without delay. If it is envisaged that a final report will take some time an interim report will be compiled and submitted for review.

See Section A.12.2 Incident Reporting

A.12.2 Incident Reporting

A.12.2.1 Incidents occurring ashore

SmartBay complies with Regulation 59 of the Safety, Health and Welfare At Work (General Application) Regulations 1993 in the reporting of accidents and dangerous occurrences when the criteria specified in the Act are met by using the HSA “on line” reporting facility.

The General Manager is responsible for determining whether or not the circumstances of the accident or dangerous occurrence meet the reporting criteria and then action the reporting procedure as required by law and must refer to Regulation 59 for precise guidance.

The HSEQ Designated Person is responsible for immediately investigating the occurrence, gathering of evidence and completing the SmartBay accident and dangerous occurrence report forms and for providing information to the General Manager for assessment and reporting to the HSA as required by law. All incidents whether they occur offshore or onshore will be treated with same level of importance ensuring that they are reported to the correct authority if applicable.

A.12.2.1.1 Summary reporting criteria

a) Any accident occurs at a place of work as a result of which any person carrying out work at that place of work dies or is prevented from performing his normal work for more than three consecutive days, excluding the day of the accident but including any days which would not have been working days, or

b) In the case of any person who is not at work but who as a result of an accident related to a place of work or a work activity dies or suffers any injury or condition as a result of an accident which results in the person requiring treatment from a registered medical practitioner or treatment in a hospital as an in-patient or an out-patient, or

c) There is a dangerous occurrence, the responsible person shall:
   (i) in the case of a death, supply the Authority by the quickest practicable means with the name of the deceased, brief particulars and the location of the accident, and
   (ii) as soon as practicable send a written report in the approved form to the Authority of the death, injury, condition, accident, or dangerous occurrence.

d) Where as a result of an accident at work an employee (or a self-employed person) sustains an injury or suffers a condition which is required to be reported under this Regulation to the Authority, and as a result of that accident the employee (or self-employed person) dies within a year of the accident, the responsible person shall, as soon as possible after the death comes to his knowledge, inform the Authority in writing of the death, whether or not the accident has been reported under paragraph (1) or Regulation 59 of the 1993 Act.

e) Where an accident which is noticeable under paragraph (1) occurs and causes loss of life to a person no person shall disturb the place where it occurred or tamper with anything thereat before:
   (i) That place has been inspected by an HSA inspector, or
(ii) The expiration of three clear days after notification, in accordance with paragraph (1) of Regulation 59, of the accident.

f) Nothing in this Regulation shall prohibit the doing of anything by or with the consent of an inspector.

g) In any proceedings taken in respect of a contravention of Regulation 59 paragraph 4 consisting of the doing of any act, it shall be a defence to prove that the doing of the act was necessary for securing the safety or health of any person.

Important Note: Whenever an accident has occurred SmartBay must check the requirements of the relevant Regulations by reviewing the HSA website and if any doubt persists as to whether a formal notification is required then the Act itself should be consulted. SmartBay have registered with the HSA for regulatory updates. Ultimately the HSA should be consulted directly.

A.12.2.1.2 Formal Notice of an accident or dangerous occurrence

Formal notice is given to the Health & Safety Authority using the on-line reporting portal or by completing HSA form ‘IR1’.

http://www.hsa.ie > Publications and Forms (using SmartBay HSA login details).

All notification of accidents or dangerous occurrences to the enforcement authority of the HSA will be completed by the General Manager who has overall responsibility for Health and Safety.

All accidents to a person, whether or not in the employment of the company, resulting in injury, however slight, must be reported to and recorded by the HSEQ Designated Person and the appropriate accident reporting form filled out and passed to the General Manager for assessment.

An Accident Report form is available for this purpose (see SMS Forms) and must be completed by the team leader of the person(s) involved in the accident. This is necessary to monitor the progress of safety standards and to ensure that proper medical attention is given where required and as an aid in the identification of hazards so that the appropriate measures can be taken to prevent the accident from re-occurring.

Where an accident investigation is necessary, all employees are obliged to co-operate fully with such an investigation and to provide any information, which may be useful in establishing the circumstances leading up to the accident. All accidents investigated will have the investigation carried out by the HSEQ Designated Person and a written report shall be prepared.

It is essential that the relevant authorities are given an opportunity to investigate the incident whilst evidence is still fresh.

The General Manager ensures that thorough and prompt investigations are carried out into all reported accidents and that a completed Accident Report Form is submitted to the appropriate authority, e.g. Client or HSA.

The General Manager is responsible for reporting the accident to the HSA / MCIB once investigated to establish the circumstances. A full investigation may take longer than the time limit for reporting an accident so an interim report is produced to meet its statutory reporting obligations. See HSA Form IR3.

A.12.2.2 Reporting Marine accidents, incidents and dangerous occurrences

1. The operator, agent or Master of a ship, irrespective of size or type operating within the exclusive economic zone of Ireland shall immediately report to the Irish Coast Guard the following:
   
   a) Any incident or accident affecting the safety of the ship, such as collision, running aground, damage, malfunction or breakdown, flooding or shifting of cargo or any defects in the hull or structural failure.
   
   b) Any incident or accident which compromises shipping safety, such as failures likely to affect the ship’s manoeuvrability or seaworthiness or any defects affecting the propulsion system or steering gear, the electrical generating system, navigation equipment or communications equipment.
   
   c) Any situation liable to lead to pollution of the waters or shore of the State or another Member State, such as the discharge or threat of discharge of polluting products into the sea, and
   
   d) Any slick of polluting materials and any containers or packages seen drifting at sea.

2. Reports sent to the Irish Coast Guard must include the following information:
   
   a) Identity of ship or boat.
   
   b) The vessels position.
   
   c) The ship’s port of departure.
   
   d) The ship’s port of destination.
   
   e) The address of sources of information regarding any dangerous polluting goods on board if non-generic.
   
   f) The number of persons on-board.
   
   g) Detail of the incident.
   
   h) Any information relevant to incidents of pollution.

3. The General Manager has the responsibility of ensuring that Marine Accidents and Emergencies are reported to:
   
   a) Marine Casualty Investigation Board (MCIB), and
   
   b) The Marine Survey Office, DTTAS.

4. Reporting emergencies to the Irish Coast Guards (IRCG) MRCC does not relieve the obligation to provide reports to the Marine Casualty Investigation Board (MCIB) and to the Marine Survey Office (DTTAS / MSO), under EU and Ireland laws.

See also Sections A.10 Emergency Response and the SmartBay Emergency Response Plan. See also SmartBay HSEQ Forms.

Records of Incident Reports are maintained indefinitely.


A.12.3 Near Miss reporting - “Just Culture”

SmartBay has “just culture policy in operation.

A "just culture" features an atmosphere of responsible behaviour and trust whereby people are encouraged to provide essential HSEQ related information including reporting of dangerous occurrences without fear of retribution.

Safety related information includes:

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• Reporting dangerous occurrences (near-misses).
• Dangerous behaviour.
• New, changed or neglected environmental aspects.
• Unsafe infrastructure, equipment including defective software.
• Lack of or unsafe procedures.
• Any safety concerns that could potentially affect safety or the environment.
• Any act or system failure that has the potential of affecting Quality.

However, a distinction is drawn between acceptable and unacceptable behaviour. Unacceptable behaviour will not necessarily receive a guarantee that a person will not face consequences.

It is a crucial requirement that the company clearly defines the circumstances in which it will guarantee a non-punitive outcome and confidentiality. SmartBay provides training and information about its approach to "just culture" near-miss reporting and investigation for all persons involved.

*International Maritime Organization: MSC-MEPC.7/Circ.7 (T5-MEPC/1.01 10 October 2008)*

See HSEQ Forms Library –NMR01-2015.06.01.1

**A.12.4 Procedure for receiving medical attention**

SmartBay has established procedures for ensuring that prompt medical attention based on the following:

1. In the event of a personal injury at work, the injured person should, if practicable, firstly obtain advice or treatment from a qualified First Aider.

2. If the injured person cannot be moved then a First Aider should be summoned to attend the casualty at the scene of the accident.

3. If medical treatment is required and providing the injured person is in a satisfactory condition to travel, then they should be taken to a doctor or hospital accompanied by a First Aider. Under no circumstances should the casualty be allowed to drive him/herself to the doctor or hospital.

4. Where the accident is more serious the emergency response plan should be followed. The emergency services must be called out appropriate to the circumstances.

- **Ashore:**
  - Call for ambulance.
  - Remove source of danger, such as live electric cables.
  - If spinal or neck injuries are suspected do not move the person unless they are in imminent life threatening danger such as fire.
  - Check all signs and symptoms.
  - Prevent arterial bleeding if possible.
  - Comfort person and take measures to avoid shock and hypothermia.
  - Hand over as much information as possible to the paramedics.

- **If at sea:** on a larger vessel the Master and safety officer will take charge. In a smaller boat, use the VHF to broadcast "Mayday" then call the Coast Guards on VHF Channel 16 and ask for a working channel to leave Channel 16 clear for responders. Report all circumstances to the Coast Guards.
A.12.5 Incident Investigation

The purpose of an incident investigation is to look into the circumstances leading up to a dangerous occurrence (near-miss), accident or pollution event so that lessons can be learned and appropriate corrective and preventive actions can be taken to restore a safe working environment and prevent recurrence.

SmartBay has established detailed procedures for reporting and investigating incidents including, but not limited to:

a) Dangerous occurrences (near-misses) including unsafe acts and negligence.

b) Accidents involving human injury.

c) Accidents involving energized machinery or systems and all lifting gear failures.

d) Electrical incidents, overheating, burning, fusing or “welding” of components, or unsafe acts and activities.

e) Failure of equipment used for HSE supporting of humans or materials.

f) Unintended escapes of any hazardous chemicals, discharge of compressed gasses or hydraulic fluids under pressure, where there are threats to health, safety or the environment.

g) Fire.

h) Breaches of security.

i) Sudden illness or when there is evidence of the same illness affecting a number of persons.

j) Road traffic accidents or driving behaviour.

k) Behavioural safety violations that could have led to an accident.

Initial reports of incidents that need to be investigated may arise out of complaints from personnel, inspections and audits. Incidents which have occurred some time ago but only coming to light at the current time may also need reporting on and investigating as the purpose of the investigation remains valid as do HSA or local and national statutory reporting requirements as they may apply.

Where an accident investigation is necessary, all employees are obliged to co-operate fully with such an investigation and to provide any information, which may be useful in establishing the circumstances leading up to the accident. All accidents investigated will have the investigation carried out by the HSEQ Designated Person and a written report shall be prepared.

Results of investigations may need to be shared with clients and other stakeholders.

Investigation findings are communicated to all personnel and discussed at HSEQ Monthly Review Meetings and HSEQ Quarterly Management Reviews.

Investigations are documented and records maintained indefinitely.

A.12.6 Investigating HSEQ Nonconformity-

Where HSEQ Management System nonconformities are identified the root causes are determined to determine the underlying contributory deficiencies or circumstances.

See Section 19.8 Root Causes.

Nonconformities are failures in the implementation of the HSEQ Management System or failures in the Management System if it complies with the requirements of the International Standards for: OH&S, Environmental or Quality Management Systems.
See TIER 2 Procedures for the Management of Nonconformities

A.12.7 Corrective Action

Timely corrective action is taken to eliminate (remove) the immediate cause(s) of an incident, accident or nonconformity and remove, reduce or mitigate the consequences, and restore controls to prevent an immediate recurrence.

Corrective actions shall be appropriate to the effects or potential effects of the incident or nonconformity encountered.

Corrective actions are disseminated as the earliest opportunity in the form of an HSEQ Alert.

Actions and recommendations arising from the findings of investigations are acted upon promptly and reviewed.

Target dates for close out are monitored by the project coordinator. Records of corrective action plans and associated reviews and target performance will be managed in ENERIT in the future.

(for example: replacing a broken shackle with a correct, fully inspected and test certificated replacement, and retain the broken items and debris as evidence for further investigation)

A.12.8 Root Cause Analysis

The prime purpose of an accident or incident investigation is to determine measures intended to prevent recurrence. The HSEQ Management Systems requires the Company to implement those measures and to ensure their continued effectiveness.

Where there are nonconformities, similar techniques are used to identify the root cause, so that close-out can be achieved by implementing verifiable corrective and preventive actions.

“Root Cause Analysis” is used to determine the underlying contributory causes.

Root causes need to be investigated and analyzed for:

- Incidents.
- Accidents.
- Non-conformances and
- Deficiencies that adversely affect quality, health, safety, welfare and the environment.

The failure of an item of lifting equipment may be traced back to a failure in training or familiarization following induction of a new recruit or a failure in the periodic inspection regime. Such underlying causes need to be determined so that preventive measures can be implemented to improve the controls and avoid a future accident.

See TIER 2 Root Cause Analysis procedures (part of the investigation process)

A.12.9 Preventive Action

Preventive actions are intended to prevent recurrence.

SmartBay has established procedures for the determination of preventive actions which are derived from Root Cause Analysis.
Plans for preventive action are disseminated to relevant parts of the organization and are required to be implemented within a targeted time frame. The time period may depend on issues such as training and technological resources.

Examples of preventive action include (*inter alia*):

- Changes to policies and strategies.
- Training.
- Improvements HSEQ procedures.
- Improvements to Safe Systems of Work.
- New processes or replacement equipment.
- Organizational changes.
- Implementation of programs for up-skilling.

They follow corrective measures already taken to remedy the immediate cause.

Preventive actions should be planned, monitored and reviewed to ensure that implementation is achieved. Preventive actions should also be periodically reviewed to ensure continued effectiveness and with verifiable evidence of success the post event action plan or nonconformity can be closed out.

Progress with preventive actions and results are reviewed at the HSEQ Monthly Review Meetings and HSEQ Quarterly Reviews.

Plans for preventive actions may be shared with clients and stakeholders.

Records are kept of preventive actions taken and their reviews.

Corrective Preventive Action plans are retained as documented records.

**A.12.10 Continual improvement**

SmartBay continually improves the suitability, adequacy, and effectiveness of the HSEQ Management System to:

a) Prevent occurrence of potential incidents and nonconformities.

b) Promote improvements in HSEQ performance.

Management considers information derived from a wide range of potential inputs to identify opportunities for improvement (*including at least*):

- Audit reports.
- HSEQ inspections.
- HSEQ Monthly Review outputs.
- Customer feedback.
- New ideas from personnel.

The SmartBay continual improvement processes consider the outputs (documented findings) of analysis and evaluation, and the outputs from management review, to identify any areas of underperformance or opportunities for continual improvement.

Outputs are described in the context of:

- The organization (Section 4).
- Actions to address risks and opportunities (Section 6 and 7).
- Objectives and plans to achieve desired results (Section 6 and 7).
- Information, communication participation and consultation (Section 8).
Safety Management System

- Monitoring, measurement and evaluation (Section 19.1).
- Management Review (Section 19.6).

Where applicable SmartBay selects and utilizes applicable tools and methodologies for investigation of the causes of underperformance and for supporting continual improvement.

SmartBay management support continual improvements by allocating the appropriate resources, management time and commitment.

Records include: Management Reviews, HSEQ Monthly Review Minutes.
A.13 Records

SmartBay keeps records in accordance with the following procedures:

Records are maintained in electronic and hard-copy form.

SmartBay operates a “common drive” which allows access across the system from any work station and remotely. The common drive is automatically backed up across the three file serves operating in series.

Electronic records are also backed up to an external Tape or Cloud-based storage removed from the main office building. Subject to permissions authorized persons may access records though the “common hard-drive”.

Records are maintained under the following conditions:

a) Legible.

b) Readily identifiable.

c) Retrievable.

d) Retained as per statutory requirements and company policy.

e) Retained for financial audit purposes where relevant.

f) Secure storage.

All records are Company Confidential and HR Information is subject to the Irish Data Protection Acts 1988 and 2003 and are retained indefinitely.

Records relating to the HSEQ Management System are retained for at least 3 years to cover the usual certification cycle.

Whilst the retention table refers to both hardcopy and electronic versions, hardcopy versions may be disposed of as per the retention requirements with electronic copies maintained indefinitely.

Records relating to Accidents, Incidents, Reporting and Investigations shall be retained indefinitely.

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SECTION B: Operational Lifecycle

SECTION B.1: Design and development of products and services
(Incorporating RenewableUK CDM specifics: see also Section 11 CDM)

B.1.1 General design and development topics

SmartBay has developed processes for the design of products and services not already documented or provided by the customer or other interested party. These design processes are documented and records maintained including changes.

Design and development of products and services may include (inter alia):

- Data buoy mooring arrangements.
- Methods and systems for the deployment and recovery of data buoys and other devices.
- Jigs, modifications and adaptations of existing equipment.
- Software.
- Data networking and communication systems.
- Data capture arrays.
- Cabling, power supplies and data boosters.

See also Section B.9 CDM (Construction, Design and Management).

B.1.2 Design and development planning

The stages and controls for design and development take into consideration at least the following aspects:

a) The ideas, nature, duration and complexity of the design and development activities.
b) Requirements that specify particular process stages, including applicable design and development reviews.
c) The required design and development verification and validation.
d) The responsibilities and authorities involved in the design and development processes.
e) The need to control interfaces between individuals and parties involved in the design and development process.
f) The need for involvement of customer and user groups in the design and development processes; (taking into account “interactive planning”, and action research).
g) The necessary documented information to confirm that design development requirements have been met.

A design and development log is maintained by the team leader for each design project.

Design and development planning must take into account, where applicable:

1) Design risk analysis.
2) Failure Mode Effect Analysis (FMEA).
3) Hazards in design (e.g. access for maintenance; or ventilation of data / power pod).
4) Environmental safeguards.
5) HAZard OPerability (HAZOP), including safeguarding the environment.
6) End use operability (efficient safe and clean operations). Where applicable, design shall take into account the safety of personnel engaged in manufacture, handling, transportation including towing, shipboard transfer and lifting, deployment and recovery. Design processes are applied equally to “project design”, where detailed documented process planning is required and which follows agreed arrangements.

B.1.3 Design and development inputs

During design and development the following inputs shall be taken into account (inter alia):

a) Customer requirements.

b) Requirements essential for the specific type of equipment, systems and services being designed and developed, including applicable, functional and performance requirements.

c) Applicable statutory and regulatory requirements.

d) Standards or codes of practice that SmartBay has committed to implement; (e.g. RenewableUK Health and Safety Guidelines).

e) Internal and external resource needs for the design and development of products and services.

f) The level of control expected of the design and development process by customers and other interested parties.

Inputs shall be adequate for design and design purposes, complete and unambiguous.

Interactive planning involving participation of interested parties shall be undertaken to resolve interface arrangements or potential conflicts, as part of the project planning.

Typical examples might include:

1) Design or development of data capture equipment which can be safely lifted to a workboat or to a ship and which can be safely deployed and recovered at sea with the minimum of risk to seafarers, including lashing / securing arrangements for sea transportation out to / from a marine test site.

2) Access for set up and maintenance is safe and with recovery of a “man overboard” or which facilitates re-boarding from the sea by a person in the water.

3) Elimination of, or minimal risk of fire and explosion from batteries.

4) Efficient, safe and environmentally friendly means of deployment and recovery of anchors, clumps or pennants.

5) Safe and effective arrangements (means) of recovering freely drifting data buoys.

6) Consultation with, and to advise, customers including clients of principals on deployment and recovery arrangements for sea bottom devices, their securing gear and cabling.

7) Consultations with workboat and or ship operators regarding shipboard rigging and securing and arrangements, including slings, spreaders, A Frame clearance, weights and dimensions.

8) Device underwater locator beacons e.g. acoustic beacons.

Records shall be maintained of all interventions.

B.1.4 Design and development controls

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Controls shall be applied to the design and development processes to ensure that:

a) The results to be achieved by the design and development activities are clearly defined.
b) Design and development reviews are conducted as planned.
c) Verification is conducted to ensure that the design and development outputs have met the design and development input requirements (including inspection and testing).
d) Validation is conducted to ensure that the resulting products and services are capable of meeting the requirements for the specific application or intended use. (e.g. by demonstration or survey, or use of test data and or calibration).

B.1.5 Design and development outputs

SmartBay ensures that design and development outputs include, as least:

a) Meet the input requirements for design and development.
b) Are adequate for the subsequent installation, delivery and deployment (manuals, planned maintenance information, parts lists and calibration data, and back up systems).
c) Hazard Operability data including designs for marine hazards and occupational safety aspects.
d) Details of environmental aspects and their significances, including material and life cycle data.
e) FMEA test results as applicable.
f) Include or reference monitoring and measuring requirements (e.g. for test data) and acceptance criteria, as applicable.
g) Ensure products and services, including software and network systems provided, are fit for their intended purpose and their safe and proper use, with due regard for the protection of the environment.
h) Documented records of test data shall be maintained and backed up.

SmartBay retains documented information resulting from the design and development process including records of consultation and test data.

B.1.6 Design and development changes

SmartBay reviews, controls and identify changes made to design inputs and design outputs during design and development, or subsequently, to the extent that there is no adverse impact on conformity to requirements.

Documented information on design and development including drawings, parts lists, component capacity criteria and software coding changes, shall be retained.

Interacts with B.7 Design for Marine Hazards

B.1.7 Software development

This section interacts with Section A.8.10.5 which should be read in conjunction with the following.

SmartBay develops software tools which provide for the organization or management of data as part of the customer service programme

The software scripts are backed up at the end of each day or programming session. The External Tape back-up unit, or alternatively Cloud-based Back-up, are removed off site with the periodicity specified in the SOP for Backup of Digital Data and Information document.
**Safety Management System**

**Fig: B.1.7.1 Data software design and development process**

- **Client Requirements**
  - Design Specification
  - Functional and performance requirements
  - System compatibility information

- **Device data protocols**
  - Data output requirements

- **Information exchange with client**
  - to ensure skills needs can be met

- **Design updates**

- **Hardware and operating system update specifications**

- **Test data** – simulated or real data stream from device

- **Update requirements from client**
  - amends or additional changes due data device or system changes

- **New data system validated and accepted by client – Live System**

- **Planning Stage**
  - Design requirements

- **Client – developer interface**
  - “Test Platform”

- **Determine needs**
  - Agree requirements

- **Assess any training and resource issues**

- **Keeping track of coding**
  - In project log

- **Obtain peer review**
  - Consult with clients: Identify any problems – correct coding – save changes and log inputs & outputs

- **Review, verification and validation at each design stage**

- **Assign project** – define roles and authorities for design and development

- **Design Outputs**
  - Draft software scripts for testing and evaluation

- **Change actions, verification of change effects – log results**
  - Client confirmation
  - Maintain “Daily Log”
  - Back up work daily

- **Records of:**
  - Coding; changes; trial results; client communications; “Daily Log”

- **“Sea++” and DB Storage scripts**
  - Produce Excel spreadsheet of data for testing.
  - Log all actions.

- **Update requirements from client:**
  - Record feedback on post-launch amendments

- **Record client feedback:**
  - Client communications; “Daily Log”

- **New data system validated and accepted by client – Live System**

- **Release data to client**
  - Monitor outputs
  - Review data outputs.
SECTION B.2 Product, service or design validation

B.2.1 Commissioning of projects

SmartBay receives enquires regarding the installation of wave energy test devices on test sites or for other work related to the marine science industry.

SmartBay has produced procedures for the tendering processes and the preparation of project plans which will be developed with the client in conjunction with other interested parties.

Section B of the HSEQ Management System describes the relevant lifecycle phases associated with delivery of a successful marine project.

These procedures will take into account the following planning criteria *(inter alia)*:

1. Design and development of products and services.
2. Site selection.
3. Survey and geophysics.
4. Site management.
5. Testing.
6. Installation, commissioning and decommissioning.
7. CDM (Construction, Design and Management).
8. Control of outsourced services and products.
9. Subsea operations, including diving services and ROV operations.

SmartBay has designed Project Planning document formats which take into account the basic elements of the new project but which will be amended to taken into account the particular requirements of the customer and the project specification.

SmartBay project planning procedures require the whole life cycle to be examined from receiving the enquiry through to completion of decommissioning and removal of the device and umbilical cables and moorings from the site.

The project planning process takes into account quality, operational safety, occupational health and safety environmental protection and the management of the site whilst focusing on the delivery of a successful project.

Project planning takes into account the relevant elements of Part A of the HSEQ Management System.

Records shall be maintained of the tendering and project planning activities including risk management documentation.
SECTION B.3   Site selection – Safety and Environmental factors

B.3.1   Introduction

This section will cover site selection and initial site investigations from two aspects; the safety factors and relevant impact categories that should be considered when identifying possible sites, and those that should be taken into account when planning and executing investigation works. Where applicable, existing industry regulations and guidelines will be identified and drawn upon to provide the developer with an appropriate and relevant approach to Health and Safety in their site development programme.

There are two key areas of consideration with respect to initial selection of potential safe sites for marine renewables installations:

- The selection of a marine site that constitutes a 'safe' location with regards to its position within its surrounds.
- The safety considerations required when undertaking site investigations to obtain data in assistance of site selection.

Note: Project managers should be guided by UK HSE research report 286 — ‘Risk implications in site characterization and analysis for offshore engineering and design’. This report considers site characterization issues, geotechnical analysis and design and risk management.

B.3.2   Site selection

If SmartBay is contracted to identify and evaluate a site it shall develop a project specific procedure based on the following guidance. These guidelines are not exhaustive and much will depend on the characteristics of the site under evaluation.

SmartBay shall obtain access to the proposed site from the licensing authorities i.e. the Ireland Foreshore License Unit (FLU).

The identification of suitable sites for marine renewable generation installation will be dependent upon a number of impact categories and their inter-relation within the proposed project. These categories include the following:

- Wave / tidal resource.
- Wind conditions.
- Water depth.
- Distance from shore.
- Visual impact.
- Local port facilities.
- The safe navigation of other marine users.
- Fishing and fisheries.
- Military exercise areas.
- Other sea areas and users:
  - Marine archaeology (if known to exist or if found).
  - Sub-sea cables and pipelines.
  - Marine aggregate extraction.
  - Marine waste disposal.
  - Offshore oil and gas.

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Project managers shall arrange for an environmental assessment to be conducted. The scope of the environmental assessment shall take into account the following criteria for the purpose of identifying environmental aspects and determining their significance:

- Biodiversity, sea life including fish, air breathing mammals, marine invertebrates and so on.
- Waterborne plankton and krill.
- Rare seaweed of scientific interest.
- Corals and coral reef habitat.

Each of these factors could influence the ability to safely construct, operate and maintain the site and should therefore be considered at this early stage.

B.3.3 MetOcean factors

SmartBay recognize the value of having reliable meteorological and oceanographic data. High value reliable information is only derived from site specific long data sets. Such data is important from a number of standpoints including, but not limited to:

- Wind, strength and direction.
- Weather including visibility, ice and electrical activity.
- Sea state including wind waves, swell, and directional data as affected by extreme wind speeds.
- Tidal height and stream data, including at various depths.
- Hydrographic information such shifting topography and deposition.
- Coastal erosion.

*Note: latest industry MetOcean guidelines should be consulted to ensure the safe development and operation of the site.*

Safe access for mobilization, demobilization, reliable and safe periodic access for monitoring, maintenance and urgent access for repair or retrieval. A difficult site can be expensive and difficult to work and with high safety risks for a large part of the year.

SmartBay documents and records sources of valid historical MetOcean data and carefully analyzes this data in the context of any proposed, current or future site operations.

MetOcean data analysis is discussed with clients and the operational hazards environmental factors and potential for delays and damage documented and communicated.

B.3.4 Port facilities and mobilization

SmartBay gathers information on nearest and nearby ports, jetties or landing places which could be of use to vessels servicing test sites.
Vessels servicing test sites need a port from which to operate from.

Port information should include:

a) Tides, port entry contacts, berthing arrangements, port agents (as applicable).

b) Port services, harbour fees/dues, tugs, workboats, lifting arrangements and access for road transport.

c) Contact numbers for essential services such as local divers and vessel surveyors.

d) Emergency information in case of fire, vessel flooding and bad weather when vessels may be at risk of breaking away.

Tidal information is also included in the Ports of Refuge being a part of passage planning.

*Ports of refuge 10.3.3 (see also passage planning for maintenance visits).*

Ssee SOLAS V Safety of Navigation Reg 1 & 34 – MCA (DTTAS clone regulation) Guidelines

(Passage planning, navigational hazards and dangers, ports of refuge, emergencies)

**B.3.5 Accessibility and access routes**

SmartBay has procedures for the selection of positioning and planning of accessibility to test sites and renewable devices, including:

- Type of, number and disposition of devices.
- Water depths.
- Local sub-sea:
  - Moorings.
  - Anchors.
  - Power cables.
- Sea bed features of interest.

These procedures should detail the arrangements for permitted and prohibited underwater activities and equipment, where a risk to the device and operating personnel exists.

Access planning procedures should include device drawings / images, plans or charts showing up to date mapping of single devices / arrays, cabling, intermediate devices including hazards and natural / manmade obstructions using data vectored onto navigation charts or specific hydrographical surveys and accredited Hydrograph Office information together with data associated with existing infrastructure.

Access points to devices should be well marked to show the safe access points and where cables interface with units. Underwater devices and cables should also be marked or label tagged with directional information to assist divers and ROV operators.

Project managers developing site specific procedures should attach relevant current Method Statement and Risk Assessments and subjected to document control and record keeping.

**B.3.6 Navigational risks**

Maritime traffic passing near to test sites present a real and significant danger to test site operators. The wash from large high speed vessels can present serious unexpected dangers to personnel attempting to board or disembark buoys / RIBS, or during lifting / recovery operators. There are also dangers from collisions with ships crossing access routes.

Sound application of the Collision Regulations is essential and procedures must emphasize this point as this is a matter of statutory compliance anywhere at sea.
When applicable, marine projects should be located in areas that do not endanger existing marine users. The extent of navigational use should be identified through a traffic survey, conducted in support of consent for the device or array location. The navigational risks associated with existing traffic can then be assessed and the device or array located to minimize any risk.

Consent conditions for offshore wave and tidal devices, as stipulated by the Coastal State authorities, include the requirement for a navigational Risk Assessment within the site developer’s Environmental Statement for wave and tidal test site proposals. Consideration should be given to Marine Guidance Note 371, issued by the UK Maritime Coastguard Agency, with regards to traffic surveys and the extent to which navigation would be feasible in close proximity to or within the array. Review and application of The Department for Business, Enterprise and Regulatory Reform (BERR’s) Methodology for Assessing the Marine Navigational Safety Risks of Offshore Wave and tidal devices’ (URN 05/1948) may also be useful to the developer in assessing the site suitability with respect to navigational safety.

B.3.7 Cable Laying and Entry

Awareness of existing marine cables is an important consideration when undertaking site selection of marine structures and suitable routes for cable laying to shore. Submarine cables are supplied by high voltage of up to several thousand volts: on average, this might be 3-4000 V for a Trans-Atlantic cable, and less than 1000 V for a UK-France cable. Severing a live cable may result in injury or death.

Some cables on the site and running to the Observatory ashore may not always be buried immediately after laying and so must be avoided. Cables when buried should still be avoided as anchors and some fishing activities could disturb or damage the cable and or the vessel using the anchors. Cables are taken into account by SmartBay when planning site utilization and the deployment of buoys and other devices. Cables of this type run at 400 VDC.

NOTE: Cable awareness charts are available in electronic and paper copies from, for example: “Kingfisher Information Service - Cable Awareness”, http://www.kis-orca.eu Emergency procedures and contact details are also available.

Cable investigations should not rely on one single source. All cables should be reported to the Harbour Master and or the Ireland or host Hydrographic Office.

Vessels anchoring, fishing or salvage, bottom sampling survey vessels are amongst some of those who need to be awareness of cables to avoid damage and electrocution.
SECTION B.4  Survey and Geophysical

B.4.1  New site investigation

SmartBay has generic procedures for the investigation of new sites not previously licensed to the organization or its principals. More specific procedures are developed from the core procedure to take into account the special characteristics of the intended site location. These might include sites (inter alia):

- With specifically shallow water.
- Unusually high tidal stream rates, extreme tidal height range, or ocean swell.
- Adjacent or within marine conservation areas of special scientific interest.
- Close to busy shipping lanes.
- Close to sites with other types of renewable energy devices i.e. wind farms.

Site investigation data, often supported by laboratory testing, is required to identify:

- Resource potential and MetOcean conditions.
- Sea bed topography (bathymetric).
- Nature and stability of the sea bed surface.
- Existence of metallic objects and structures.
- Geomorphology and engineering properties of the strata underlying the sea bed.

The extent of investigations should be sufficient in area, depth and detail to adequately cover the device or array location and potentially the cable routes. The size and complexity of the proposed anchor point arrangements, piling or foundation positions and the anticipated sea bed soil conditions to be encountered at these locations should also be considered in determining their extent.

Site investigation may include combinations of the following methods:

- Detailed bathymetric and side-scan sonar surveys.
- Shallow seismic reflection surveys.
- Shallow sea bed sampling.
- Shallow and deep in situ cone penetrometer / vibrocore.
- Geological conditions and unknowns.
- Current, tidal flows and wind speed recording.

These offshore surveys may take the form of short campaigns, for example, seismic surveys, or may require the installation, monitoring and maintenance of measuring devices as in the case of MetOcean data. Each will in themselves pose health and safety risks that require the same methods of identification, assessment and mitigation as those offshore activities in later phases of the project. This section will discuss mitigation measures that can be used to reduce these risks.

Consideration should be given to the presence of munitions in the area, locations of official dump sites for both chemical and conventional weapons can obtained using the information supplied by the OSPAR Commission and the Imperial College. A combination of surveying equipment such as side-scan sonars, magnetometers, underwater television and pulse induction gear can be used to establish the extent and density of munitions contamination in an area.
B.4.2 Hazard ID and Risk Assessment (site) HIRA

SmartBay completes Hazard Identification and Risk Assessments prior to commencement of site investigation works, to ensure that all risks associated with carrying out the works have been properly addressed and reduced to ‘as low as reasonably possible’ (ALARP). HIRA processes are discussed in more detail in Section 6.4.1 and covered by HSEQ Procedure A.9.1.2.

The HIRA process (in line with Section 5.7 Risk Assessment) should be used to identify and mitigate or control hazards and risks at every step of the installation and commissioning phase. Outcomes of the HIRA process should feed into Method Statements and tool box talks to ensure that all those engaged in carrying out the works are aware of the residual hazards and risks and any steps that they should be taking to mitigate them. Where changes are being considered all potential hazards are to be identified and risks evaluated, Section 5.8 expands on this subject Management of Change.

Note: Procedure for reporting suspicious items on the seabed including unexploded ordnance.

(Note: DTTAS Survey Office Marine Notice No 16 of 2001).

B.4.3 Contractor Selection for site investigation

Under CDM regulations, the Client should ensure that contractors selected to carry out site investigation works are competent to do so.

Contractors should operate a fully documented Health and Safety management system which should address all of the issues inherent to marine survey operations.

A job specific Risk Assessment and construction phase plan should be provided to the client prior to mobilization.

The client should ensure that the contractor is made aware of health and safety risks associated with working at the location.

Vessels engaged shall as a minimum meet the requirements of Coastal State maritime coastguard Small Commercial Vessel Code or SOLAS for the operations to be undertaken (See Section 13 Control of Outsourced Products and Services).

Interacts with Sections A.6.8.1/2.

B.4.4 Passage Planning

As part of the pre contract hire arrangements for any workboat the operator must agree to provide SmartBay with an up to date “passage” or voyage plan which must be presented to the project manager prior to sailing.

The purpose of the passage plan is to ensure safe navigation of vessels and the avoidance of dangerous situations. Passage planning is mandatory under SOLAS Chapter III Regulation 34.

The Skipper or Master of any boat is responsible for conducting a passage plan. The passage plan shall be developed in accordance with the relevant DTTAS Marine Notice (05/2002) current at the time of the intended passage.

Passage Planning applies to vessels of all sizes and must be conducted by the Master/Skipper on a berth to berth basis, from when a vessel is properly secured to the quayside, a mooring buoy in a safe harbour, or the deck of a ship prior to launching and covers the intended voyage from that safe location back to the same or a another safe berth at the end of the passage. A vessel sailing out from a safe mooring, tending a buoy or test device or conducting a hydrographic survey or any other activity including for training or test purposes and returns to a safe berth is completing a voyage for
A berth to berth passage plan is required. Similarly a RIB or workboat launched from a ship for any purpose and which is recovered again completes the passage only when all persons are disembarked and back on board fully secured. Boats launched from ships are the responsibility of the Master of the mother-ship and it is the Captain who should ensure that a passage plan is devised and documented and explained at the briefings.

Where boats pick up SmartBay personnel in one place, runs to the site with service personnel then returns service personnel to a different location the passage plan is required to reflect any change in plans. Skippers must carry tidal information and the appropriate charts / electronic plotting device capacity to facilitate comprehensive passage planning.

A vessel voyage passage plan must take at least the following into consideration to comply with SOLAS which is enforceable by national States:

B.4.4.1 Prior to proceeding on any voyage whether to open waters, inshore or estuarial waters connected to the sea (i.e. tidal), the Master shall ensure that the intended voyage has been planned using the appropriate electronic and or paper nautical charts, for the area concerned taking into account the guidelines developed by the IMO and taken into maritime laws of national governments and disseminated by the Flag Administrations and the Royal Yachting Association.

Skippers shall ensure that any navigational aid, such as hand held / fixed GPS plotters are updated for the latest version of electronic charts. Large offshore vessels should be working to the ISM Code Safety Management System.

B.4.4.2 The passage plan shall identify a route which:

1. Runs from berth to berth.
2. Takes into account any relevant ships’ routeing systems.
3. Ensures sufficient sea room for the safe passage of the ship or boat throughout the voyage including sufficient water under the keel at all states of the tide.
4. Passage plans should take into account tidal stream conditions paying particular attention to counter currents and rip tides.
5. Passage plans take into account tidal gate or lock sills and should have accurate information on locking in / out times.
6. Take into account all known navigational hazards and adverse weather conditions; and
7. Takes into account the marine environmental protection measures that apply, and avoids, as far as possible, actions and activities that could cause damage to the environment.
8. Ports of refuge.

Passage plans help determine the following measures:

9. Vessel limitations including types of navigational and radio communications equipment and navigation lights.
10. Boat speed and duration taking into account tidal streams affecting navigation and boat speed, including wind over tide.
11. Fuel consumption and capacity (50% reserve at least).
13. Food and water.
15. Emergency Plans which include emergency communications, helicopter rescue procedures.
Safety Management System

Guidance and information for passage planning is provided in Nautical Almanacs and the UK Hydrographic Office publication NP 100 – “Mariners Handbook” and in Marine Notices issued by the Irish Maritime Administration / DTTAS.

See SmartBay Procedures for chartering a workboat (A.6.8.1 Selection of vessels).


Prior to chartering workboats SmartBay procedures require the project manager to undertake a joint inspection with the Skipper/Master See A.6.7 Technicians Working on Vessels.

SmartBay procedures contain the requirements for pre-charter checks with links to a vessel safety checklist form.

Workboats must meet, at least, the criteria laid down in the MCA Small Commercial Code or Irish equivalent.

In the case of larger vessels the project manager is required to ensure that the vessel has a current ISM Safety Management Certificates (SMC) which is evidence of compliance with National and International Regulations and which regularly audited navigational safety criteria.

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Note¹: The Master has overriding authority when decision making in the interests of safety of life at sea and the protection of the environment (SOLAS IX/1) and not to be compromised by commercial considerations or overridden by the office ashore.


B.4.6 Safe working conditions on test site

SmartBay has developed procedures for safe working on test sites using shore based workboats. These procedures take in account, at least the following:

.1 Weather conditions and weather forecasts covering the period from prior to departure by boat, during the passage and on site and for the return passage back to a safe berth plus one day.
.2 Tidal conditions including heights of tides, tidal stream rates.
.3 Sea conditions taking in account that predicted wave and swell conditions are serious affected by “wind over tide” which increases wave height and reduces the pitch of the waves making them steeper and more likely to break. When the tide runs opposite to the wind the sea state is affected by the equivalent of 1 notch on the Beaufort Scale or additional 2-3 metres/second. These conditions can result in lower boat speeds with smaller vessels throttling back from e.g. normal cruising speed to 5 knots to avoid damage and less discomfort for crew, however

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resulting in potential delay. Such conditions mean an increase in fuel consumption for any
given speed and this has to be taken into account when passage planning.

See HSEQ Forms Library: PPF01-2015.06.01.1 Passage Planning Form.
SECTION B.5 Site Management

B.5.1 Existing site management

On-going site management arrangements take into account the need to address issues such as:

- Tracking personnel between vessels and onshore areas.
- Shift work, and potentially lone working.
- Housekeeping, including the need to maintain clear access routes, and waste disposal at the shore interface.
- Storage and movement of materials, possibly including use of temporary storage areas.
- Maintenance and security of data nodal sites where cables come ashore.
- Maintenance and security of long range RF data link equipment and broadband connections.
- Response to severe weather, including storms and winter conditions and:
  - Emergency response, either relating to an incident in the port, on the offshore site, or an external emergency event.

Ports and shore-based contractors will have their own safety management systems; bridging documents are needed in order to manage the interface with SmartBay of the OREI operator’s systems, in normal operation and emergency situations. Common arrangements should be put in place for the management of visitors and contractors who are not normally on the site, such as specialist repair technicians.

Harbour Authorities marine coordination functions play a key role in managing the use of the port. This includes planning all vessel movements, in conjunction with any construction contractors / port facility operations when planning logistics support, which possibly involves Vessel Traffic Systems control (VTS) or Harbour Masters and pilots who control vessel movements where harbour authorities operate such systems. Harbour Masters have a statutory obligation to direct traffic within their port limits and so have the right to pass instructions to vessels.

B.5.2 Site identification – navigation marks

Marine energy test sites must be clearly marked by navigation marks and identified on navigation charts. SmartBay use GIS (Geographic Information Systems) to assist in the identification of site margins and for planning, recording deployment of devices and cables, for monitoring positions of moored units and for vectoring MetOcean data.

GIS systems assist with maps / vector layering, visualization, geocoding, geographical analysis, imagery and database management.

Where SmartBay has responsibility for the management of marine energy test sites there is a legal obligation to ensure that planned changes to the site are notified to authorities responsible for navigation marks including lights that warn shipping.

SmartBay is cognizant of other vessel movements which may take priority due to their draft and the tidal opportunities and harbour operational requirements.

Given the wide range of requirements and associated mitigation actions, early dialogue with port authorities, existing users, onshore contractors and workforce representatives is beneficial to establishing safe and efficient port operations.
The General Manager is responsible for ensuring that any issues relating to Navigation Marks (site IALA cardinal marks) are reported to the Commissioners of Lights and any changes that may require temporary Notices to Mariners to the relevant hydrographic service and the Marine Institute (MI).

SmartBay in conjunction with the Commissioners of Irish Lights (CIL), may deploy AIS virtual beacons to supplement cardinal marks in the future.
SECTiON B.6  Site Design, Specification, Management and Testing

SmartBay management design and manage the layout of test sites and work with clients to establish the most suitable location within the overall site for the positioning of wave energy test devices.

B.6.1 Site Specific Data Requirements

Factors taken into consideration include (inter alia):

- MetOcean information including wave and tidal stream data.
- Proximity of umbilical power and data cables.
- Positions of other buoys and devices on site.
- Holding ground most suitable for effective mooring.

B.6.2 Device Safety in Design Considerations

Whilst clients may have specific requirements for the provision of a SeaStation, test sensor platform, buoys, or some sub-sea bottom based or mid depth device, all of which should be provided with safe access for engineers during mobilization, operations, maintenance and decommissioning.

- Systems are designed or modified after design reviews to ensure safe access.
- Safe mooring systems.
- Prevention of interference with effectiveness of neighbouring devices.
- Located within the area marked by the cardinal buoy system.
- Buoys and devices fitted with navigation marks / lights and radar reflectors and GPS automatic position reporting and alarm systems.

Mooring failures usually require complex subsea operations including the use of divers, necessary to recover buoys, devices and their mooring equipment including sinkers / clumps and anchors, which should be carefully avoided as it puts humans at additional risk and has cost and data interruption aspects.

B.6.3 Responsibility for safe design of wave energy devices

The Designated Person has overall responsibility for ensuring that Hazard Operability (HAZOP) studies are completed on a consultative basis and records maintained of technical and safety reviews.

B.6.4 Method statement risk management information

Method statements shall take into account the findings from (inter alia):

As applicable –

- HAZOPS.
- Project planning for commissioning / decommissioning, operations and maintenance.
- HAZID.
- Risk Assessments.
- Safety design factors intended to reduce the risk and facilitate enhanced controls that mitigate the consequences to moderate the residual risk eg. decking, guard rails and strong points for life lines and facility for a person in the water to climb on to the device, and mooring rings for workboats.

B.6.5 Design Records

Design records are maintained including provision for obsolete documents archived to assist in any research or for reference purposes.
SECTION B.7  Design for Marine Hazards

B.7.1  Identification of Marine Hazards

Marine Hazards are identified during the project planning stage and during device, mooring and cable network design. The SmartBay HSEQ Management System provides guidance for the development of safe systems of work including procedures, Method Statements, Risk Assessments and Permits to Work underpinned by Hazard Operability (HAZOP) studies and Hazard Identification (HAZID) which will be subjected to Risk Assessment processes to determine the controls required to reduce or eliminate the risks.

Examples of where in the design processes the identification of where marine hazards may be inherent or encountered include:

1. Design of the device itself:
   a) Design specifications taking into account access for installation and maintenance.
   b) Design of battery and sensor PODs, access to POD, tower and antennas.
   c) Solar and wind-turbine power generation systems.
   d) Deployment – lifting, launching, towing, transport at sea, and recovery.
   e) Mooring – type of, methods, fittings, cables and clumps or anchors.
   f) Connecting of cables.
   g) Electrical systems.
   h) Stability, ballast and buoyancy arrangements, watertight integrity.
   i) Fire protection.

2. MetOcean and meteorological considerations:
   a) Tide – tidal stream rates – potential for buoys to drag or break free, requiring marine operations to recover or reposition buoys including repositioning of anchors and clumps and restoration of cable connections1.
   b) Wind over tide, rip tides, counter currents and under tow.
   c) Tidal range – heights of tides – especially at spring tides2.
   d) Heavy ocean (sea) swell that cause the buoy or device to roll heavily or “heave” which makes boarding or working onboard difficult or unsafe and so access is restricted to calmer conditions3.
   e) Wind – wind affects the sea state, see also “wind over tide” schedule maintenance when wind is with the tide reducing breaking wave tops and spray and moderating buoy / device movement.
   f) Sea floor conditions, visibility, swell effect, topography, under sea hazards.

Note1: it is important to take the whole life cycle into account when planning a project to conduct Hazard Operability studies on a particular device: what we need to do to the buoy and the human interface considerations that may mean the buoy or device has to be modified to reduce risks. This includes anchoring methods and types of anchor / clumps. Failures mean that the buoy or device has to be recovered putting humans at greater risk that during routine operations, also disruption in terms of time and the cost of damage or loss of equipment. A break away unit may become a hazard to navigation and or result in an environmental incident. A buoy or device might drift ashore and become wrecked up on rocks leaving debris to harm the ecology or humans.

Note2: wave energy test devices are commissioned to improve our knowledge of the design and application and to identify the best or optimum conditions for efficient power generation. Swell waves
and tidal conditions are important aspects in the generation of wave power. However to deploy, install and decommission equipment there is a degree of marine hazard and this why the Hazard Operability study is so essential. Some of the hazards can be mitigated by accounting for safe access in the design stages.

Note: whilst swell is essential we need to ensure that the test of small / full scale prototypes are safe to board, work on and leave, during: deployment and commissioning, routine maintenance and unscheduled maintained or emergency intervention.

Buoys or devices may break away and need to be recovered in weather and sea conditions that render boarding dangerous, in which case emergency towing hawsers need to be attached without boarding or even without using a workboat / daughter vessel. This can be achieved by the use of buoyed pennants permanently deployed that can be grappled by a larger vessel offering a safe platform for workers.

B.7.2 Personnel Transfer

The HSEQ Management System safe systems of work require all personnel marine transfer arrangements to be risk assessed and included in relevant Method Statements.

SmartBay has established procedures for personnel transfer i.e.:

- From quay side to work boat.
- From safe berth to site.
- Transfer of persons from work boat to device, buoy, platform or other vessel.
- Competent use of safety gear including lanyards, life lines, harnesses, fall arresters, dry-suits, life-jackets and Personal Locator Beacons.
- Transfer back to work boat and returning safely to the shore.
- Safety gear accounted for, checked out and re-stowed.

When SmartBay personnel are working from a large vessel using daughter boats they will adhere to the procedures and comply with instructions provided by the Master of the ship.

Personnel transfer is not completed until the personnel are safely back on shore together with all equipment.

Method Statements and Risk Assessments shall be developed or at least shared with the boat skipper.

Where larger vessels in excess of 24 metres are used for transfer of personnel, Method Statements shall be developed together with the Master of the vessel. Larger vessels are required to have Safety Management Systems with which SmartBay project activities should interact.

In most cases where technicians are transferred from larger vessels the transfer is completed using a RIB or other daughter craft launched from the larger vessel.

B.7.3 Transferring tools, spares and gear to test device

SmartBay HSEQ Management System requires Method Statements to take into account the risks and methods associated with transferring tools and gear to / from the work boat to device.

In general lighter gear is transferred from a small workboat by heaving line with each end handled by personnel secured to the device or boat by lifelines and harnesses.

Falling tools can be dangerous and should be properly restrained when being transferred.
Tools dropped into the sea are lost costing money, delaying the work and may even cause some environmental pollution and may never be recovered.

Each case shall be planned on the particular circumstances amended dynamically for changes in weather and tides or any changes in the boat type, light levels and tidal conditions which may vary from those considered at the planning stage.

Risk Assessments and Method Statements may need to be updated “on the day” following a dynamic Risk Assessment and careful attention to the need for review prior to operations is essential.

**B.7.3.1 Tests on site**

SmartBay conduct system and instrumentation tests and facilitate third party tests by lease operators or their contractors.

Tests on site require visits to the shore base station or to the device offshore in the test area. In some cases underwater tests are necessary.

The HSEQ Management System covers the following interventions:

- Planning work activities.
- Risk assessments.
- Safe Systems of Work including Method Statements and Permits to Work.
- Access to sites and personnel transfer vessels.
- Boarding devices from workboats.
- Personnel transfer and access between boats and devices and with other boats/ships.
- Underwater or subsea activities.
- Transfer of tools and spares.
- Working safely.
- Electrical safety including electrical testing.
- Emergency procedures (see Emergency Response Plans).

SmartBay has developed a company procedure for “Tests on Site” and accompanying safety check list to assist with planning tests on site.

**B.7.3.2 Tests on shore**

Tests are often carried out in the workshops, some are relatively simple and are included in generic Risk Assessments however some are associated with hazards that introduce occupational health and safety risks, typically these might include *(inter alia)*:

- Electrical tests up to 400 VDC.
- Pressurized systems including air receivers, pneumatic control systems, pressurized liquid systems (hydraulics), compressed gasses excepting multi gas canisters used for calibration which have almost zero risk. Small aerosol type canisters of “limited quantity” gasses.
- Tests carried out at height.
- Tests involving hazardous chemicals or gasses.
- Tests conducted in confined or enclosed spaces.
- Tests where loan working applies.

Where tests are carried out in shore facilities the workshop supervisor or Designated Person shall ensure that:

- Hazards are identified, that risks are assessed and “toolbox talks” (safety briefings) conducted.
Additionally, certain types of tests may also require:

- Method Statements (depending on the complexity).
- Documented Permits to Work (including: electrical, enclosed space, working at height).
- Permits to Work are properly completed, followed and signed off when the tests are completed.

Where the test is carried out by a third party:

- Safety information is shared between SmartBay and the third party.
- Permits to Work are completed by the person(s) carrying out the work and “signed off” by the team leader or supervisor so that all persons involved are fully aware and informed of the hazards, risks and controls needed.
- The area is protected and segregations implemented to ensure safety of persons not directly involved.
- That appropriate PPE is worn at all times.

Personnel who need to carry out tests should use the “Contents” page to locate the various components of the Safe Systems of Work procedures within this document.

Checklists for Safe Systems of Work can be located in the “HSEQ Forms” file.
SECTION B.8 Installation, Commissioning and Decommissioning

B.8.1 Introduction

SmartBay works with the client or lessee the requirements of the particular project. The summary requirements for the project are detailed in the contract which is prepared prior to being agreed at the time of engagement. The contract includes a schedule for the main “delivery” stages of the work and agreed prior to engagement.

In some cases SmartBay are acting as both agents of the lessor and as contractor to the lessee for the installation and maintenance of test equipment.

Where the test device is a prototype wave energy generating device it is likely that the lessee will carry out their own maintenance with the assistance of SmartBay who may provide support by way of logistics, access and data link management.

In any event the requirements and transactions shall be documented and records maintained.

The project manager shall develop a “Project Handbook” based on the contract specification with contents agreed between SmartBay and the client.

See also HSEQ Section: A.8 and A.9

B.8.2 Planning, Communication, Coordination

SmartBay takes the lead in planning for installation, commissioning and decommissioning of test equipment on test sites under management for the lessor and follows the requirements described in the HSEQ Management System where reference is made to the HSEQ Management Systems “Contents” at the front of this document.

Due to particular circumstances including where special “one off” test sites are to be used.

B.8.2.1 Planning requirements

Planning requirements include close liaison with the client (lessee) to establish (inter alia):

a) Establishing appropriate and effective communications with all stakeholders, including the client (lessee), site license holder (lessor), internally and with authorities and contractors.

b) A thorough understanding of agreed specifications and requirements.

c) Time schedules for installation, commissioning, operations and de-commissioning.

d) Identification of all safety and environmental hazards, risks and controls.

e) Identification of legal requirements.

f) Identification and implementation of plans for compliance with legal and Approved Codes of Practice (ACOP).

g) Implementation of relevant “Construction, Design and Management” regulations (CDM).

h) Notifications.

i) Resources necessary to meet project requirements including competences and training.

j) Reporting.

k) Documentation and records.

B.8.3 Notification

SmartBay complies with legal notification requirements including those recommended in codes of practice.

Notifications include (inter alia):
a) CDM notifications (where appropriate).
b) Accident and incident reporting.
c) Marine notices (including: Notices to Mariners, lighthouse authorities)
d) Insurance information disclosure (to ensure cover and avoid withdrawal by insurers) required by the terms of the project contract.
e) Archaeological and heritage aspects including discovery of wreck and human remains.

Note: Approved Codes of Practice including those standards, codes and guidelines recognized by authorities and by International Conventions e.g. SOLAS, MARPOL, Maritime Security, International Maritime Labour Convention.

B.8.4 Documentary control and record keeping
Reference is made to the requirements of the HSEQ for document control and record keeping.

Project planners utilize the arrangements in place for the electronic control of documents including means for access, updating, sharing, data handling, protection and IT security.

Individual project requirements specify documentation requirements, additional controls and requirements for sharing and dissemination.

B.8.5 Hazard Identification and Risk Assessment (HIRA)
There is a legal requirement to identify hazards and conduct Risk Assessments to determine the necessary controls to reduce the consequences, minimize or eliminate the risk of accidents and injuries to humans and for the protection of the environment.

See Sections: A.6.4.2 HAZOP; A.6.4.3 HAZID; B.4.2 HIRA (Site).

B.8.6 Method statement
The safe systems of work detailed in the HSEQ Management System require risk based “Method Statements” for the safe operational control of work activities associated with the all projects.

Method statements are also required from contractors and any other organizations or individuals working on or visiting the sites.

Method Statements shall; be documented and shared and amended to maintain currency and effectiveness and are subject to document control and record requirements.

B.8.7 MetOcean considerations
Weather working limits may be a complex combination of wind, wave and tidal velocities. It is likely that different working limits will be set for different project activities for example crane operations, towing or diving operations, and also for different vessels. Good, site specific forecasts are important to assist the scheduling of weather dependant operations safely and efficiently. Contingency planning in the event of deteriorating conditions requiring the suspension of operations should be considered as part of a Risk Assessment prior to commencement of works.

B.8.8 Information, Consultation, Training and Supervision

B.8.8.1 Information
It is vital that technical and operational information exchanged between SmartBay and the client is disseminated to all internal departments and stakeholders as necessary to ensure effective consultation and contribution.

B.8.8.2 Consultation

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SmartBay ensure that all relevant personnel and stakeholders are consulted to ensure that the interests of the client, the workforce, contractors and authorities are taken into account.

Records of consultations are documented and maintained for protection, review and as evidence in case of dispute.

Consultation is an important aspect in the development of Safe Systems of Work and Method Statements and critical for the identification of OH&S hazards, environmental aspects and operational risks.

B.8.8.3 Training

With each project the competency needs for the SmartBay team are assessed internally and training needs appraised.

Projects may be concerned with deployment, installation, operation and maintenance, data recovery and decommissioning of test devices.

Each project requires a review of Risk Assessments and emergency procedures and so training and competence are reviewed in these areas in the event of new or unusual equipment being involved.

It is possible that language and foreign language documentation is an aspect requiring special attention to ensure effective communication and application.

Training needs include at least:

- Language.
- Software related to the test devices.
- Instrumentation.
- Special features of the device including mooring arrangements.
- Transport, lifting and deployment arrangements.
- Network requirements.
- Safety – equipment, activities, work environment and unusual working arrangements.
- Emergency preparedness and response.
- Working with clients and contractors.
- Marine activities and access arrangements.
- Legal requirements.
- Codes of practice.

SmartBay procedures therefore include project training appraisals.

Training reviews and actions are documented and recorded.

For training to be effective comprehensive ongoing liaison with the client (lessee) is essential.

B.8.8.4 Supervision

SmartBay ensures that there is adequate levels of supervision provided by individuals assessed for the appropriate trade, oversight and leadership skills.

It is important that the General Manager together with the project manager and HSEQ Designated Person assess the skills needed by the team whilst assigning supervisors to oversee activities, assuming leadership in the field during emergencies and reporting to the project manager.

SmartBay procedures require project team supervisors to understand the role of contractors and to work closely with their supervisors and duty holders and report any non-conformities or deficiencies to the project manager.
The role, responsibilities and authorities of supervisors is defined in the project handbook and applied to Method Statements.

The relationship between persons assigned management and supervisory responsibilities are outlined in bridging documents.

See Section B.9 CDM for additional information regarding the specific role of the contractor as “duty holder” and CDM coordinators.

**B.8.9 Human Elements, Leadership and Management**

When developing projects due regard shall be had for human elements including the following:

a) Working environment.
b) Safety, health and accident prevention.
c) Measures to prevent fatigue.
d) Training and familiarization.
e) Communications.
f) Leadership.
g) Accident and near-miss reporting.
h) Emergency actions and response.

See Section A.8 “Resources” for application of the requirements of the core “HSEQ” management system.

See Section: A.8.2.1 Employee Handbook.

**B.8.10 “Project Handbook”**

The purpose of a Project Handbook is to ensure that quality, health, safety and environmental requirements are fully catalogued and communicated to SmartBay personnel.

SmartBay create a “Project Handbook” during project planning to provide a document detailing the main points in the contract and detailing references to at least the following (*inter alia*):

a) “Operational Log” is kept on the project and is held in the “Developer Folder” on the common drive.
b) Introduction.
c) HSEQ statement (to include obligation to meeting HSEQ management system requirements).
d) CDM statement (to confirm CDM status i.e. notifiable works).
e) Detailed description of project.
f) Flow chart of events and organizational aspects.
g) Time scale.
h) Team members, roles and responsibilities.
i) Contractor list and relevant tasks.
j) Organogram.
k) Resources.
l) Details of relevant Approved Codes of Practice.
m) HAZOP.
n) HAZID (indicating whether or not a Permit to Work is required).
o) Method statements.
p) Risk assessments.
q) Environmental aspects.
r) Principal legislation.

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The Project Handbook should contain the following live documents in support of the HSEQ aspects related to the project (*inter alia*):

Appendices (supporting documents):

1) Method statements.
2) Risk assessments (referenced to the Project Number).
3) Drawing identification lists.
4) Technical specifications of equipment and components.
5) Client contact details.
6) Contractor contact details.
7) Contact details for relevant authorities.
8) Emergency contact numbers.
9) Emergency plans specific to project and reference to HSEQ management system emergency preparedness, actions and response.
10) Any other relevant project information.

The Project Handbook shall be maintained in electronic form, uncontrolled if printed, and devoid of financial and commercial aspects apart from “Quality” requirements.

**B.8.11 Simultaneous Marine Operations (SIMOP)**

Where two or more potentially clashing operations occur simultaneously at the same time / same place there is the risk of conflicts which can override individual controls. SmartBay recognize the hazards that can arise out of Simultaneous Marine Operations of SIMOPs.

*Figure: B.8.11.1 SIMOPS Diagram*
An example in the test field might consist of cable laying activities running in parallel but separately from a mooring operation and where conflicts resulting in new hazards may occur.

**B.8.11.1 Project Planning and SIMOPS**

It is very important when project planning to investigate the possibility of a clash of activities. Individual jobs might be quite safe when the risks are identified and properly managed but when SIMOPS are identified great vigilance is required to ensure that the hazards arising out of conflicts are risk assessed and additional controls applied that all parties take into account.

**B.8.11.2 The SIMOPS Process**

The SmartBay project planners should identify the scope of the work and the scheduling. This why it is important that permits are required by all contractors and SmartBay own personnel before commencing work on the test site and any activity within 500 metres of the subsea cables and equipment including mooring clumps or sinkers. This means that the potential for SIMOPS risks need to be assessed and signed off before SmartBay can issue a Permit to Work on the site.

This is used to review all activities on the planned dates and localities to determine whether or not SIMPOS can be identified. The following issues are considered (*inter alia*):

- Schedule clashes e.g. activities in the same area or time.
- Physical clashes e.g. anchor patterns, loss of position.
- Failure impacts e.g. buoy break away, damage to under water nodal equipment.
- Marine surface operations.
• Diving safety.
• Interference between surface operations e.g. towing and deployment.
• Contracts and third part interfaces e.g. liabilities, risk / insurance.
• Environmental impacts e.g. currents, weather limitations and sea state.
• Territorial clashes e.g. third party activities i.e. hydrographic surveys, fishery research.
• Any other combined / simultaneous activity in the area of operation which could compromise project success criteria.

B.8.11.3 SIMOPS Planning-brief meeting

Referred to in the IMCA guidance as a “kick-off meeting”. The project briefing meeting should be arranged for all parties to the SIMOPS and the client / SmartBay, so that the scope of work for the operations can be drawn up.

The party with overall responsibility is identified at the SIMOP project briefing.

B.8.11.4 Preparation of Work-Specific Dossier

Based on the findings of the project briefing meeting and scope of works developed for the test site (i.e. sea area enclosed by cardinal marks and as marked on the navigational charts) a dossier containing all pertinent work-specific information for each of the SIMOPS operations is prepared by each of the parties including SmartBay, their contractors and subcontractors. Where SmartBay has simultaneous operations the same applies and the persons in changed are responsible for ensuring the dossier is complete. The Designated Person having oversight of this process.

This information is needed to enable a systematic SIMOPS assessment to be made.

Information required for the dossier includes at least *(inter alia)*:

• Summary of work identifying the main features of the activities.
• Scale drawings including GIS data maps and diagrams.
• Lists of assets (i.e. devices) and equipment including boats.
• A summary of constraints relating to each SIMOPS activity- see also weather.
• Organizational chart showing roles and responsibilities.
• Summary of main hazards for each of the operations; including those already risk assessed.
• Risk Register with controls and mitigations.
• Management of Change procedures with methods of reviews and or deferral.
• Escape routes and Emergency Plans for boats including those towing.
• Dive plans including rapid response.
• Weather and sea state limitations (which may not be the same for each respective activity).
• Communications and contact information (see also Emergency Response Plans).
• Acoustic method allocation and limitations, including an assessment of interference between systems and on ROV and diver communications. Including management of acoustics.
• Checklists – including operations, weather, and contingency plans.
• Emergency Response Plans (which may need to be harmonized by a bridging document).

B.8.11.5 SIMOPS Assessment Review

A meeting of the parties and or project managers in charge of SmartBay in-house SIMOPS shall meet to review each of the work-specific dossiers in a systematic manner.

Whilst SmartBay in-house operations are likely to be linked there should still be a joint review to ensure that potential conflicts resulting in possibly unforeseen hazards shall be reviewed in the overall context of SmartBay’s own operations.
Appropriate tools shall be used to identify the hazards and risks in each of the work-specific dossiers and a review made of the controls and agree on joint mitigation or contingency plans.

Methodology / tools which can be used to identify risks are laid out in the HSEQ SMS Section 6: i.e.:

- Hazard Identification and Risk Assessment (HIRA).
- Clash analysis; mind mapping planned events and vectoring in failures.
- Interdependency analysis – where the common factors lay.

B.8.11.6 Hierarchy of controls

It is important that during the SIMOPS review that the roles and responsibilities of each contracting party or section of the SmartBay operations are identified and a hierarchy of control established for each work-specific activity e.g. Dive Supervisor or boat Master together with allotted Party Chiefs and Operations and Technical Manager in overall charge.

Project management should identify the authorizations for work to proceed (site access permits) and which also clearly indicate who has the authority to STOP the SIMOPS, e.g. weather, change in any party’s (deviation) planned work-specific activities, system or communication failures, boat losing power, lost sinker or accident / incident or ‘near-miss’ that requires the stopping of that or combined operation.

B.8.11.7 Development of SIMOPS Interface Document

It is important that SIMOP / interface documentation is developed for the SIMOPS activities.

Depending on the scope of the SIMOPS activities, this could comprise one document (combined Method Statement for SmartBay joint work-specific operations, such as locating and recovering a lost sinker) however when diving operations are contracted in, a separate Method Statement is required from the diving company.

SIMOPS interface documents may consist of several documents, covering specific, clearly identified SIMOPS activities.

SmartBay project managers and contractors should refer to the IMCO SIMOPS ACOP for detailed guidance. See also SIMOPS Diagram B.8.11.1.

B.8.11.8 Preparation for SIMOPS

In preparation for each of the SIMOPS activities a pre-operations briefing is undertaken to, at least:

- Ensure that all parties at the site are aware of the roles and responsibilities and hierarchy of controls.
- Validate all lines of communications, operational and emergency prior to final authorization to proceed using the access permit issued by the Designated Person to each project manager or Party Chief designated by another party active in the SIMOP.

B.8.11.9 Undertaking the SIMOPS

Once any SIMOPS has started it is important that there is regular communication between all involved parties and between any simultaneous SmartBay operational activity.

Including but not limited to:

1. Daily meetings.
2. Regular communications as defined the SIMOPS Interface Document.
3. Emergency Communications – as required by the Emergency Response Plan.
.4 PTW Authorizations – SIMOPS shall be coordinated through the Person in Charge (PIC) as identified in the Interface Document. SIMOPS should be managed through a single PTW system managed by the PIC with arrangements detailed in the Interface Document.

.5 Change Control – throughout the SIMOPS systems specified in the Interface Document should be in place to monitor the hierarchy of controls to ensure that all parties recognize a deviation from the control limits and therefore apply an ‘all stop’ or management of change (MOC) process is conducted as appropriate.

See Section 9.3 Management of Change.

.6 Any incident, accident or “near-miss” involving equipment, persons or which is going to cause a delay in one part of the SIMOP shall be communicated to the other parties.

B.8.11.10 Close Out of SIMOPS

Once the SIMOPS activities have been complete a close review of the simultaneous operations events and outcomes shall be conducted to identify and review any lessons that could be learned.

B.8.11.11 SIMOPS Records

SIMOPS planning shall be carefully documented and records maintained in accordance with requirements of the SmartBay HSEQ Management System. Records should also include GIS mapping data, diagrams and contemporaneous documentation.

See also Section B.9 CDM – Construction, Design and Management.
SECTION B.9   CDM (Construction, Design & Management Regulations)

B.9.1 Introduction to CDM

Construction, Design and Management legislation exists in the Republic of Ireland and the UK under their respective safety in construction legislation. CDM regulations apply to work to or on vessels such as ships and mobile offshore installations, including off-site manufacture of pre-fabricated elements and components.

A complete explanation of the application of CDM in the marine energy section is provided in RenewableUK “Offshore Wind and Marine Energy Health and Safety Guidelines which can also be used to apply to the Ireland construction site safety legislation.

B.9.2 CDM – Key aims

The CDM regulations provide a framework for the Design, Construction and Management of construction projects. The key aims of CDM are to:

a) Improve the planning and management of projects from the very start.

b) Identify hazards early on, so that they can be eliminated or reduced at the design or planning stage, and the remaining risks can be properly managed.

c) Target effort where it can do the most good in terms of health and safety; and

d) Discourage unnecessary bureaucracy.

B.9.3 Notifiable Projects

Except where the project for a domestic client, the Republic of Ireland HSA or the UK HSE and other EU national equivalents, must be notified of projects where construction work is expected to:

a) Last for more than 30 working days; or

b) Involve more than 500 person days, for example 50 people working for over 10 days.

SmartBay projects may last more than 30 working days but the construction elements are confined to design, planning and deployment of data buoy moorings or other test devices. Lessees are responsible for the manufacture or construction (off-site) of wave energy generators.

SmartBay may be required to lay submarine cables from the test device to the shore however this is not seen as construction under the CDM regulations.

B.9.4 Defining the “Client”

When a potential lessee engages with SmartBay to manage the deployment of a test device on a marine site under the management of SmartBay the lease is seen as the “client”. If the lease cannot act as the “client” under CDM conditions the lessee can agree with SmartBay to formerly hand over their obligations under the relevant provisions specified in the CDM regulations and as explained in the CDM Approved Code of Practice (ACOP).

Under CDM regulations there is an obligation to determine the “client”. There may be times when SmartBay acts as the client in that they appoint contractors in which case it means that SmartBay coordinates the health, safety and welfare activities in order to meet the aims of the HSEQ Management System and the CDM regulations for the purposes of reducing risks and ensuring maximum safety for personnel and other stakeholders, and the avoidance of damage to property and the environment.
B.9.5 CDM Co-ordinators

A CDM Coordinator is only appointed when the project is notifiable under CDM regulations.

The role of CDM Coordinator is to provide the client with a key project advisor in respect of construction health and safety risk management matters. They should assist and advise the client on appointment of competent contractors and the adequacy of management arrangements; ensure proper coordination of the health and safety aspects of the design process; facilitate good communication and co-operation between project team members and prepare the health and safety file.

Through early involvement with clients and designers, a CDM coordinator can make a significant contribution to reducing risks to workers during construction, and to contractors and end users who work on or in the structure after construction.

The CDM Coordinator works with the designers, contractor “duty holders” to ensure that Health, Safety and Welfare works effectively across the site, for each contractor and trade such that one contractors actions do not compromise the safety of another.

B.9.5.1 Appointment of CDM Coordinators

In most cases the project manager would act as the CDM coordinator, with the HSEQ Designated Person assisting and deputizing.

Persons fulfilling the role of CDM Coordinator should be competent in matters of Health Safety Environment & Work and fully conversant with the SmartBay HSEQ Management System and familiar with the CDM ACOP.

When working on routine activities or non-notifiable projects the SmartBay HSEQ Designated Person works with the project manager to ensure that HSEQ activities are coordinated between clients, designers, departments, individuals and external contractors and stakeholders.

B.9.6 Duty Holders under CDM

Where contractors are working on a project they are legally bound to act as duty holder and appoint a representative to work with the CDM Coordinator to ensure safety works across the project and after completion when the contractor may have to return for follow-up work including modifications, specialist maintenance and remedial work under warranty.

B.9.7 Documentary Processes

Under the CDM regulations and in accordance with any relevant Approved Code of Practice (ACOP) requirements the CDM Coordinator shall ensure that documentary procedures are followed at least the extent required by the SmartBay HSEQ which encompasses those requirements.

Document control is vital such that versions of design specifications and drawings together with technical references are identifiable, traceable and current.

Records of documents including plans and specifications, change order requests and HSEQ related items shall be retained in accordance with the requirements of the HSEQ or the relevant national CDM regulations which ever requires the longest retention period.

Ireland Legislation:

UK Legislation:

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SECTION B.10: Control of externally provided products and services

See also Section: A.9.4.

B.10.1 Engagement of contractors

SmartBay shall stipulate in the contract with the supplier regardless of the format used: i.e. email, letter or formal contract, at the time of engagement that controls shall apply appropriate to the work being carried out.

Contractors and their subcontractors are required to perform their services and deliver products in accordance with the requirements Section A.9.4 and to comply, as a contractual obligation with all other relevant parts of the SmartBay HSEQ management system when required to so.

B.10.2 Where CDM Applies

Due regard shall be had to CDM Regulations. When applicable the client or SmartBay shall review the potential CDM status depending on which party takes the lead on any construction, design and management projects.

B.10.3 Monitoring and Measurement of Contractors

The project manager in the case of wave energy operations and maintenance, or other persons assigned the responsibility of overseeing contractors or suppliers shall monitor the performance of the delivery of outsourced goods, equipment and services to ensure that compliance with all requirements is verified. This may be carried out by the most appropriate means including:

a) Regular reviews of projects or progress with supply and delivery.
b) Contract review.
c) 2nd party audits.
d) Site visits and consultations.
e) Reviewing reports provided at agree times.
f) Verification of purchased product or services.

B.10.4 Non-conformance by supplier

Where there are problems with the delivery of specified goods or services or with aftermarket customer service including warranty issues or where there are safety and environmental concerns the issues shall be raised systematically with the contractor or supplier by email.

In some cases it may be necessary for the project manager or other manager to investigate the non-conformance and seek immediate corrective action. The supplier will be expected to provide a report and an action plan for preventive actions.

SmartBay shall process the non-conformance in compliance with measures outlined in Section A.9.5 – Control of non-conformities.

B.10.5 Documentation and records

Problems concerning the procurement of outsourced supply of services and equipment / products; supplier assessment, feedback and corrective actions shall be documented and recorded.
SECTION B.11: Project operation and maintenance

B.11.1 Control of production and service provision

Following successful commissioning of devices and cabling (including wireless data transfer solutions) adequate operational and maintenance procedures are implemented to ensure performance criteria are met and that units are safe to work on and pose no threat to the environment.

Different types of devices, mooring arrangements, sub-sea cables and or wireless data network systems on site will require documented operational procedures and these are developed jointly with the device operator. Operational procedures require monitoring and measuring to ensure that operational, safety and environmental criteria are met.

Maintenance arrangements are planned in advance with agreed tasks and schedules which shall be documented and periodically reviewed.

Procedures will take into account standards and guidelines found in:

a) HSEQ Management System.
b) Approved Codes of Practice.
c) Marine Energy Health and Safety Guidelines.
d) Current Health Safety and Welfare legislation,
e) Manufacturers and installers guidelines.

See also Section B.9 – CDM.

B.11.2 Meeting the requirements

In meeting these requirements SmartBay shall ensure that:

a) Inspections are held at appropriate intervals.
b) An non-conformity or defect is reported, with its immediate and possible root cause, if known.
c) Appropriate corrective action is taken; and
d) Records of these activities are maintained.

B.11.3 Contingency and standby systems

In order to maintain the necessary level of performance of the devices and to ensure the continuity of quality MetOcean and energy data SmartBay and the client shall:

a) Identify equipment and technical systems, the sudden operational failure of which may result in device failure or hazardous situations.
b) The routine maintenance procedures should provide for specific measures aimed at promoting the reliability of such equipment and systems.
c) These measures should include the regular testing of standby arrangements (backup systems) and equipment or technical systems that are not in continuous use.

B.11.4 Maintenance Routines

The provisions outlined in B.11.2 and B.11.3 should be integrated into the project planned maintenance regimes.

B.11.5 Unscheduled maintenance

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SmartBay has procedures for provision of unscheduled maintenance or repair. These procedures include (inter alia):

a) Evaluation of risks associated with access and boarding of devices.
b) Workshop based risks and review of controls where hazards are identified.
c) Evaluation of defects and any damage that may have resulted in damage.
d) Inspection and verification.
e) Deployment of resources including replacement parts.
f) Purchasing and logistics.
g) Corrective and preventive actions.
h) Review of circumstances, corrective and preventive actions.
i) Complete formal incident report for significant breakdowns.
j) Due regard shall be had to any circumstance, defect or actions that might result in recurrence.
k) Documentation and records (i.e. job cards – workshop records).
l) Inclusion in HSEQ review meeting agenda.
m) Implementation of lessons learned.

Special note: Human health and safety shall not be put at risk where circumstances such as bad weather or rough sea conditions create perilous work environments, or where adequate marine transfer and access resources are inadequate.

See: Section A.7 Marine Hazards.

B.11.6 Critical spares, tools and equipment

SmartBay reviews the criticality of spares and equipment with the lease / operators of the test device and data networks to ensure rapid response to maintain device safety and continuity and integrity or data stream.

Criticality is determined on the basis of Risk Assessment.

Critical spares and use of any special tools are associated with trouble-shooting flow charts.

Spares and exchange parts shall be held at strategic locations ready for use.

Controls including spares holding, special equipment, tools and exchange components are matters for review with the operator since there may be cost / benefit and finance implications.

B11.7 Identification and traceability

SmartBay procedures require the identification and traceability of components, drawings, images, reports and other documents.

It is important that operational information, performance related reports, routine and unscheduled maintenance is collated and reviewed since this is highly useful for the ongoing development of test devices and prototypes.

Where there is component failure or a design issue, identification and traceability of items may be crucial so that matters can be resolved with the supplier or manufacturer.

Identification and traceability of lifting equipment is a legal requirement.

B.11.8 Customer or contractor property

SmartBay procedures require protection of customer property whether devices in the field, spares, equipment and any materials in store.
Contractors are responsible for their own property unless formally assigned in writing.

Inventories shall be maintained and records of transport consignment notes, manifests and delivery notes maintained.

B.11.9 Preservation of design information, product or property

SmartBay procedures include guidance and measures for including preservation of design, manufactured and installed equipment and intellectual property including software.

Preservation of product and intellectual property includes physical and anti-virus and malware security.

SmartBay complies with Data Protection legislation.

B.11.10 Post-delivery activities

SmartBay collects and collates post-delivery, including, but not limited to:

a) post deployment monitoring.
b) information from maintenance reports.
c) outages, incidents, defects and non-conformance reports.
d) data stream performance and client feedback.
e) Remedial and preventive actions.
f) Reviews of emergency situations.

B.11.11 Control of changes

Changes to project plans and operational activities are reviewed and where appropriate subjected to the HSEQ Management of Change procedures.

Where prototypes are under test or devices are used for gathering, transmitting and recording data it is important that changes are approved after thorough review since test data could be compromised and thus rendered corrupt resulting in cost and delay.

Changes may also interact negatively with safe working practices and thus render Method Statements and Risk Assessments ineffective in preventing an accident, damage pollution.

B.11.12 Calibration of monitoring and measuring devices

Projects which involve the installation, testing, operational maintenance of calibrated test monitoring and measuring equipment shall include reference to the SmartBay procedures for calibration of tools and devices as well as guidance specific to the requirements of the project and the particular devices.

These procedures apply equally to generic equipment used in SmartBay workshops, IT systems, maintenance equipment and safety equipment such as atmosphere testers for enclosed space entry.

All measurement sensors shall be calibrated either by the manufacturer, approved service agents and or SmartBay technicians who have been trained in the particular calibration equipment.

Where measurement traceability is: a statutory requirement; a requirement of a customer or relevant interested party; or considered by SmartBay to be an essential part of providing confidence in the validity of measurement results; measuring instruments including calibrated tools, shall be:

a) Verified or calibrated at specific intervals or prior to use against measurement standards traceable to international or national measurement standards. Where no such standards exist, the basis used for calibration or verification shall be retained as documented information.
b) Identified in order to determine their calibration status.
c) Calibration shall be verifiable by certification issued by a competent authority clearly identified with the device.

d) Safeguarded from adjustments, damage or deterioration that would invalidate the calibration status and subsequent measurement results, and

e) Records shall be maintained of the calibration status of equipment when installed in wave energy systems and or support equipment.

See SmartBay documented procedures for Calibration of measuring devices, tools and equipment. These procedures apply equally to generic equipment used in workshops and IT systems, maintenance and safety equipment such as atmosphere testers.
SECTION B.12: Subsea Operations

B.12.1 Diving Operations

The nature of the undertakings managed by SmartBay necessitates diving offshore.

There are a number of scenarios that would necessitate the use of offshore diving services. The need for diving services is identified during (inter alia):

1) Project Planning – for:
   a) Site inspection.
   b) Cable route surveys (if ROV camera survey is not suitable).
   c) Installation of cable junction and relay components, or

2) Commissioning
   d) Connection, inspection, maintenance and repair of cables.
   e) Installation, commissioning and decommissioning of marine energy devices.
   f) Unscheduled repair of wave energy devices and cable networks.
   g) Recovery of equipment lost in the sea on site.

This section describes the company policy for the procurement and management of offshore dive services.

B.12.1.1 Regulatory Compliance – Diving Offshore

Diving contractors are required to demonstrate compliance with diving at work regulations for the relevant Coastal State.

Saturation diving is not required at the depths over test sites.

Diving contractors would be responsible for any hyperbaric rescue and treatment arrangements if operability study findings required these facilities.

http://www.hsa.ie/eng/Your_Industry/Diving/Legislation/

“[The Authority is currently working on legislative proposals to replace the Safety in Industry (Diving Operations) Regulations 1981 (S.I. No. 422 of 1981). The legislative proposals (the Safety, Health and Welfare at Work (Diving) Regulations) are currently with the Office of the Parliamentary Counsel for Government for legal settlement. A timeframe for completion of this process is not known at this stage - See more at: http://www.hsa.ie/eng/Your_Industry/Diving/Legislation/#sthash.8unSzHVw.dpuf]"

The Republic of Ireland HSA have published a set of Diving at Work guidelines which should be followed. SmartBay procedures require diving contractors to comply with the Republic of Ireland mandatory guidelines found at:

http://www.hsa.ie/eng/Your_Industry/Diving/Diving_at_Work/

See Section B.12.1.3 SmartBay dive contractor assessment checklist.
B.12.1.2 Dive Contractor Assessment Checklist  
I.e.- Checklist of Emergency Plans

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<th>DIVE SAFETY CRITERIA</th>
<th>SUMMARY REQUIREMENTS</th>
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| Safety Management      | • Accreditations.  
                          | • Safety Policies.  
                          | • Safe Systems of Work.  
                          | • Method Statements.  
                          | • Risk Assessments.  
                          | • Dive Permit Systems.  
                          | • Equipment & Pre dive checks.  
                          | • Checklists, Logs and records. |
| Emergency Plans        | • Missing divers.  
                          | • Entanglement.  
                          | • Rescue or recovery of sick injured or unconscious diver or team member.  
                          | • Emergency recompression of divers.  
                          | • Diving equipment malfunction / faulty of broken equipment.  
                          | • Loss of gas supply or vital support equipment including loss of communications.  
                          | • Diver over rapid ascent to the surface.  
                          | • Fire.  
                          | • Electrical accident.  
                          | • Evacuation from sinking boat/ship.  
                          | • Aborting a dive.  
                          | • Difficulties keeping dive base stationary.  
                          | • Approach of adverse / severe weather or water conditions. |
| Compression chambers   | • The diving contractor has specific responsibility to locate the nearest available compression chamber to the diving operation and to make arrangements and obtain contact details for the use of the chamber in the event of an emergency.  
                          | • Diver evacuation plans that include Irish Coast Guard Helicopters within the Irish Search & Rescue Region.  
                          | • Appropriate suitable arrangements with other coastal state SAR organizations. |
| Emergency Equipment    | • Suitable equipment should be available for rescuing an incapacitated diver from the water such as proprietary rescue devices. |
| Dive team size         | • Sufficient competent, medically fit divers, topside support and supervision. Taking into account:  
                          | • Diving method.  
                          | • Nature of the work.  
                          | • Depth of the dive.  
                          | • Diving plant and equipment being used; and  
                          | • Number of hours being worked per day.  
                          | • Sufficient trained personnel to deal with any emergency situation*:  
                          | • *Note: as a minimum - a dive supervisor, who may be the boat skipper but not otherwise involved as a diver, and a second diver for emergency cover. However up to date regulations should be consulted during planning. |
| Diving Medicals        | • Valid certificates of medical fitness.  
                          | • Diving and pregnancy. |
The SmartBay wave energy test site at Spiddal lies outside the Galway Harbour Limits.

**B.12.1.3 Guidelines for Dive Emergency Plans**

The plan should cover the provision of an effective means of emergency communications and contact details for medical personnel and emergency services such as the Coast Guard, ambulance service, nearest hospital (a map and directions may be helpful) and lifeboats. Procedures should include calling for assistance from the emergency services (a script that includes pertinent details such as the exact location of the dive site and that it is a diving emergency can be useful for someone calling the emergency services) including advance liaison with the services where appropriate.

Plans should be achievable and not be reliant on the intervention of the emergency services as the primary course of action. Whilst the use of the available emergency services may ultimately result, the plan should address the immediate actions required by the dive team at the dive site prior to the emergency services taking control. The members of the team must receive adequate instruction, information and training in order to carry out the actions required of them. The plan must be readily available and familiar to all relevant workers and members of the dive team.

See more information regarding dive Emergency Plans at:
http://www.hsa.ie/eng/Your_Industry/Diving/Emergency_Plans/#sthash.ibTkZVV2.dpuf

**B.12.1.4 IMCA Compliance**

SmartBay procedures require diving service contractors to operate in compliance with National legislation, offshore diving industry codes of practice and marine energy H&S guidelines.

IMCA provides detailed competence assurance and assessment checklists for a wide range of positions and levels such as vessel Masters, crane operators, riggers, technicians, and in relation to different activities such as survey work, diving and general vessel operations.

SmartBay diving service contractor procedures are developed taking into account the interactions described in the following publications (as current at time of intended operations):


International Marine Contractors Association “IMCA International Code of Practice for Offshore Diving” IMCA D 014 current version.
B.12.1.5  Method Statements and safety related information

SmartBay diving contractor procedures include the exchange of safety information including Method Statements, joint Risk Assessments, diving permits, Dive Emergency Plans and notifications of diving operations or HSA site license.

B.12.2  ROV Operations

B.12.2.1  Introduction to ROV operations

Remotely Operated Vehicles generally referred to as “ROVs” can be used for a number of purposes. In general terms ROVs are a safe alternative to the human diver that can operate at depths < 50 metres. They have longer duration than divers and are often used where it is hazardous or inappropriate to use divers, for example in adverse weather conditions. However for many tasks they lack the dexterity of a human diver.

Typical tasks performed using ROVs include:

- Sea bottom surveys and site inspections.
- Mooring inspections.
- Locating, identifying and removing fouling materials (e.g. fishing net debris carried in with the tide).
- Cable route survey.
- Supporting commissioning and decommissioning of test and experimental devices.
- Inspections of cables and underwater junction units.
- Recovering lost items including anchors.
- Retrieving bottom sensors.
- Underwater inspection of wave energy devices.
- Underwater observations of wave energy devices.
- Environmental surveys and impact assessments.

ROVs come in all shapes and sizes and most fall into categories associated with the tasks they are expected to perform. Typically they include the following types:

- Classes 1 & 2 - Observation Class (excursion range 140-240 metres)
- Class III – “Workclass” ROVs (Hercules and Centurion), fitted with a range of manipulator arms.
- Class IV – Towed and bottom crawling vehicles.
- Class V – Prototype or development vehicles, including MI - OSS ROV units and Autonomous Underwater Vehicles (AUVs) – radio controlled / programmable free swimming units.

Typically ROVs comprise the following elements:

- ROV frame with lifting lugs and tethering elements.
- Buoyancy and ballast control.
- Propulsion systems (thrusters).
- Position keeping systems.
- Cameras, video functions and lighting.
- Manipulators, interface tools and skids.
Hydraulic power packs, battery PODs, umbilical interface units (including fibre optics).

B.12.2.2 Deployment of ROVs

The decision to use ROVs depends on necessity. They are expensive, complex and susceptible to handling damage. Some that take their power supply from a surface vessel require high voltages at relatively low amperage to provide power for the systems. However in shallow water and in light tasking conditions smaller ROVs have less power requirements.

Larger ROVs are transported and launched from larger vessels fitted with the necessary control, handling and maintenance resources. Very small ROVs may be launched from smaller work boats and these are usually of the observation type used for inspections.

All ROVs are controlled from the surface and typically they have propulsion system controls, depth attitude and manipulator controls. Data feedback is sometimes recorded within the ROV memory systems and or transmitted to data management systems on the mother ship. Video capture in real time is used for task monitoring and control purposes. They may be more than one camera system.

ROVs are either hired in and brought in by contractors who have agreed to perform the tasks planned by the project manager or client (lessee).

The logistics involved in the preparation, movement, protection, deployment and recovery involve some degree of hazard depending on the circumstances.

B.12.2.3 ROV Operability Hazards

Hazards associated with deployment of ROVs include (inter alia):

- Lifting to from support jigs, trucks, to vessels and in / out of the sea.
- Working under, around and on top of an ROV during maintenance and preparation for lifting.
- Electric shock; umbilical or tether cable terminations.
- Hazards associated with high pressure hydraulic systems.
- Manipulation arms, thruster impellers, and other energized systems not properly isolated and tagged out whilst being worked on.
- ROV shifting on deck of ship- i.e. in bad weather during sea passage – not secured properly.
- ROV swinging around on davit or from A frame during deployment overside / recovery.
- Entanglement of steadying lines, umbilical cable or tugger wires.
- Fouling ship propeller, azimuths or thrusters.
- Hazards associated with the operation of the umbilical winch.
- Hazards associated with moonpools and or cursor systems designed to facilitate launching and recovery in moonpools, or overside trolley and A Frame systems.

Small ROV’s launched overside from small workboats still present hazards including manual handling, entanglement and hazards associated with davits and “HIAB” / telescopic cranes.

Loading to from vessels, movement, overside deployment and recovery of ROVs should be carried out by the ships’ crew with the necessary competence and training. There may be times however when technicians have to do work on the ROV in which case the ROV should be properly secured and power systems isolated and test precautions taken in line with Risk Assessment controls and Method Statements and in accordance with the Safe Systems of Work required by the HSEQ Management System. These will be developed in conjunction with the vessel Master / Safety Officer in accordance with the vessel’s mandatory ISM Code Safety Management System.
Any work done on ROVs ashore follows the SmartBay workshop maintenance and test procedures in line with the HSEQ Management System Safe Systems of Work.

**B.12.2.4 ROV maintenance and deployment records**

All ROV associated activities shall be documented and recorded so that there is a full record of planning, design elements, modification, preparation for deployment, recovery and restitution of an ROV.

**PART C: HAZARDS AND ACTIVITIES**

**Introduction**

Section C is concerned with outlining some of the hazards and controls associated with aspects of work undertaken by SmartBay including those associated with offshore project life cycle phases. The lists are not exhaustive but are given to provide guidance to management and personnel assigned duties under the HSEQ management system.

**C.1 Safe Working Practices**

Described in the HSEQ Management System and include *(inter alia)*:

- a) Work planning.
- b) HAZID / HAZOP.
- c) Risk Assessments.
- d) Method Statements.
- e) Permits to Work.
- f) “Tool box talks”.
- g) Safety inspections.
- i) Lifting operations and lifting equipment Regulations – LOLER.
- j) Provision and Use of Work Equipment Regulations – PUWER.
- k) Confined / enclosed space entry procedures.
- l) Personnel transfer and device access safety.

**C.2 Site access and maritime safety**

- a) Falling between quayside and boat.
- b) Falling overboard from personnel transfer craft (RIB / workboat).
- c) Falling into sea when boarding data buoys.
- d) Trips, slips and falls on mother ships (research vessels / large workboats).
- e) Entanglement during deployment of test data devices.
- f) Man overboard from ship when embarking / disembarking daughter craft.
- g) Struck by loads being lifted by vessel cranes.
- h) Crushing by ships energized systems.
- i) Struck by cables parting in snapback zones.
- j) Hypothermia, frostbite and fatigue.

**C.3 Navigational safety (offshore) – access to sites**

- a) Heavy seas making movement about vessels hazardous.
- b) Heavy seas capsizing small workboats.
- c) Seasickness.
- d) Vessel systems failures – engines, steering or navigational systems.

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e) Fires onboard workboats, Passenger Transfer Vessels (PTV’s) and ships.
f) Collisions and groundings.
g) Fouling of propellers.

C.4 Marine energy device access/egress and personnel transfer

a) Man overboard – hypothermia – drowning.
b) Trapped between buoys / device and workboat / PTV.
c) Falling from buoy, platform or device into the sea.
d) Trips, slips and falls on buoys, devices, docksides.
e) Struck by items being transferred to from devices.
f) Falling into working mechanism of wave energy test rig.
g) Entanglement in ropes, cables pennants and being dragged overboard.

C.5 Working at height

a) Becoming trapped in buoy towers.
b) Climbing down quay side ladders to vessel decks.
c) Boarding RIBs and workboats from mother ships.
d) Falling down stairways on ships.
e) Knocked over by buoy wind generator turbine on data buoy.
f) Slipping when using stairs.
g) Being impaired when using stairs.
h) Slipping when carry items on stairs (“one hand always for you”).
i) Falling from lorry load bed whilst loading / unloading equipment.
j) Falling from ladder in yard whilst working on a buoy.

C.6 Confined & Enclosed spaces

A confined space is one where the space is not normally manned and may be restricted in terms of access and mobility as well as there being other hazards including the potential for a dangerous atmosphere. Examples include pump rooms, unmanned auxiliary engine rooms and battery rooms.

An enclosed space is one that is ordinarily closed off, for example a tank, void space or chain locker and in which it is assumed that the atmosphere is toxic and or depleted in oxygen.

SmartBay do NOT require their personnel to enter enclosed spaces. However SmartBay arrange training for all relevant personnel in the event circumstances change.

Note A: A “SeaStation” is essentially a periodically unmanned floating trials support vessel. In the event that SmartBay become managers of a SeaStation vessel specific procedures shall be developed for its safe management and which shall include procedures for entry to confined and enclosed spaces intended to prevent accidents which could involve fatalities.

Note B: Very significant dangers are present when there is no training and incompetent or reckless attitudes and negligence in the lack of use of Safe Systems of Work associated with enclosed space entry.

Note C: It is a criminal offence to permit or facilitate enclosed space entry without following approved procedures. SmartBay prohibit personnel from entering any enclosed space (Dec 2014).

Dangers that are associated with enclosed space entry include:

a) Suffocation – effects of oxygen starvation.
b) Reduction of oxygen content in space due to corrosion of steel structures.
c) Effects of breathing in excessive amounts of inert gasses displacing oxygen – asphyxiation.
d) Effects of toxic gasses.
e) Presence of flammable toxic gasses arising from the presence of residual fuels or leaks from fuel lines and or methane generated by decomposing organic matter found in mud from ballast water.
f) Presence of Hydrogen Sulphide H2S which can be fatal at concentrations as low as 50 ppm (parts per million) but alarms are often set at between 05 – 10 ppm to allow for immediate evacuation. Source may be decomposition of organic matter including marine organisms or sewage.
g) Trips, slips and falls as a consequence of asphyxiation.
h) Corroded ladders and platforms that cannot support persons and which may be sharp edged.
i) Restricted height.
j) Limited access and mobility which restricts movement and impedes use of equipment or rescue.
k) Dangers from poor training and supervision especially during non-compliant rescues.
l) Dangers arising from use of incorrect equipment.
m) Where no efficient means of ventilation are available.
n) When personnel are inadequately trained and supervised, and Safe Systems of Work not followed.

Note: Always abide by Confined / Enclosed Space warning signs onboard ships.

C.7 Lifting – cranes and winches

- Not complying with LOLER Regulations.
- Being struck by swinging loads suspended by ship’s cranes, davits and “A” frames as vessel rolls and pitches.
- Tugger winch wire rope failures causing snapback.
- Crushed by loads being moved by cranes and tugger winches.

C.8 Electrical safety

Note: sub-sea power feed-in cables, ROV umbilical or tether cables run with voltages up to 400 VDC.

- Electric shock from broken (parted) ROV tether cables or umbilical’s.
- Electric shocks from failed ROV cable terminations.
- Electric shocks from umbilical winch slip rings.
- Dangers of water and electricity.
- Electric shocks causing seizures.
- Electric shocks that burn.
- Electric shocks that cause falls with secondary injuries.
- Not using 110V transformers on power tools outdoors.
- Using good isolation and tag-out procedures.
- Electromagnetic Field (EMF) while working with ROV and subsea cables.

C.9 Ergonomics

Ergonomics or design and layout of features – can, if not well thought out, contribute to accidents.

Experimental wave energy devices should be designed with safety access and onboard movement taken into account. Some wave energy converters have little scope for additional access facilities e.g. attenuator types and point absorbers.
HAZID Risks Assessments must take into account the particular design of the units including their mooring arrangements. Hazard Operability analysis and assessment should be made at the design stage and reviewed again when a project is being considered.

Safe access is required for installation, deployment including moorings, machinery and data systems set up, operations and maintenance and ultimately decommissioning and removal.

C.10 Manual Handling

There is legislation covering the legal obligations for employers in the workplace where manual handling is a feature of work or activities related to work or employment.

Even lifting or moving small items around the office can result in some disorder. All personnel should receive manual handling training and there should be reminders posted in the workplace including offices and workshops.

Disorders arising from manual handling can occur when accessing buoys, straining to stay on a ladder or climbing, and from handling parts and tools when performing transfers and operational maintenance. Hazards associated with manual handling are included in Risk Assessments and taken into account when developing Method Statements.

1. Musculoskeletal Disorders (MSDs) including:
   a) Back pain.
   b) Upper Limb Disorders (ULDs).
   c) Lower Limb Disorders (LLDs), and
   d) Repetitive Strain Injury (RSI) when using keyboard / mouse and Display Screen Equipment (DSE).

2. "Eye breaks" for Display screen equipment

There is an obligation on SmartBay to ensure that PC VDU use, including protracted work on “tablets” and “notebooks” is not excessive between breaks and meets with guidelines associated with the regulations.

C.11 Personal Protective Equipment (PPE)

See also Section 6.4 Risk Assessments and 9.1.2 Hierarchy of Control

a) Appropriate Personal Protective Equipment must be used at all times. Risk Assessments should take into account the use of PPE as a control however it is the last measure. See "hierarchy of controls".

b) There is an obligation on the employee to use the PPE provided.

c) Use of the SmartBay PPE Matrix.

d) PPE is stipulated in the Permit to Work.

e) PPE should be inspected prior to use and again after use and defects reported.

f) Defective PPE should not be used and must be replaced

g) PPE is registered in the database, monitored manually and in the Asset Database.

h) Abuse of, or careless handling of PPE is a disciplinary matter.

i) PPE is regularly inspected and serviced as per manufacturers recommendations where relevant e.g. inflatable life jackets.

j) Calibration of PPE e.g. atmosphere testers.

k) Contractors personnel must use appropriate PPE – infringements are reported to the Designated Person or project manager who shall take the matter to the responsible duty holder.
C.12 Personnel Tracking

SmartBay uses personnel tracking devices and rapid data accessibility including PLB. While vessels are offshore the Designated Person Ashore will watch AIS periodically which also serves to determine where the vessel is working and whether this matches the Safe Systems of Work and PTW.

C.13 Remote and Lone Working

Remote and lone working can be carried out safely if proper precautions are taken and risk assessed.

SmartBay has a responsibility to ensure that individuals working away from where the team is working together including away at another site are working safely in a safe work environment.

The rules relating to safety of remote or lone workers equally applies to SmartBay employees and contractors alike. Induction programmes highlight the safety issues associated with lone working.

Typical hazards associated with remote or lone working in the marine and offshore context include:

- a) Falling, becoming unconscious with no one to raise the alarm or offer assistance.
- b) Becoming trapped in machinery with no one to raise the alarm.
- c) Falling overboard.
- d) Overcome by fumes.
- e) Electrocrution.
- f) Fatigue and stress.
- g) Manual handling.
- h) Sudden illness.

Significant emphasis has to be placed on not having immediate assistance and not having effective means of summoning help.

Method statements should be supported by Risk Assessments for lone working scenarios.

Lone Working Procedure

SmartBay's Lone Working procedure applies outside the hours of 7.30am - 8.00pm Monday to Friday.

Please contact your line manager by phone if you are in the building outside of these hours.

Inform your line manager when leaving the building.

This procedure also applies during normal working hours if you find that you are the only member of staff working on site on a particular day.

C.14 Slips and Trips

Probably the most common hazard either ashore or afloat. SmartBay employees and their contractors personnel could encounter any of the following hazards, including *(inter alia):*

- a) Slipping on a wet steel deck whilst ship or workboat is pitching and rolling.
- b) Tripping over deck fittings or cables / wires.
- c) Slipping on the "deck" of a buoy.
- d) Tripping up on the quayside and falling into the dock.
- e) Slipping whilst embarking / disembarking a workboat.
- f) Slipping on gangways or cat-walks.
- g) Fully dressed diver slipping on deck causing serious injury.
- h) Tripping over cables or gas lines in workshop.
Where the deck of any boat or ship is moving around there is always the added danger of “stumbling” especially if the deck is wet and there are activities particularly with energized systems. Consequences can be severe particularly head injuries, liver or spleen or fractures.

See also HSEQ C.12 Man Overboard (MOB)

C.15 Noise

Noise injury is usually chronic and can have lifelong effects.

Whilst noise can be factor in the work of SmartBay it is likely to be of short duration however Risk Assessments should take noise into account if the hazard is identified.

Typical sources of noise that may be encountered:

- a) Machine tools.
- b) Compressors.
- c) Diesel engines and outboard motors.
- d) Use of headphones.
- e) Portable drilling machines.

The exposure time is likely to be limited however ear-plugs or ‘ear-defenders” must still be considered where controls are deemed necessary. There is legislation covering noise in the workplace.

Where noise levels are high and persistent there is a duty on the employer to monitor exposure and assess the long term health risks if any.

Records should be kept of such assessments.

C.16 Vibration and repetitive strain injury

In the context of SmartBay work activities exposure to vibration is likely to be of short duration and might typically occur when:

- a) Working with hand held power tools.
- b) Vibration from outboard motors.
- c) Over use of computer keyboard and mouse (i.e. during programming and data handling).

It is important to monitor any potential sources of and exposure to vibration in the workplace.

C.17 Eye Injury

Eye injuries can occur at any time where care is not taken to control the activity and equipment. SmartBay insist on use of safety glasses.

Effectiveness of safety glasses can be impaired by saltwater spray, steam and spray paint, however their use is essential unless there is actual conflict and their use could contribute to other hazards.

Typical causes of eye injury could include:

- a) Using power driven grinder, wheels may fracture or metal particles may puncture the eye.
- b) Using a lathe, pedestal drill or milling machine – swarf and flying chuck keys.
- c) Cutting metal or high tension nylon banding on packaging.
- d) Using jet wash or steam cleaners.
- e) Using chemicals including battery acids.
- f) Escape of high pressure liquids – hydraulic leaks.
- g) Repetitive use of VDUs without taking breaks.
C.18 Safety signs
SmartBay provide and have displayed appropriate safety signage.

C.19 Hazardous Chemicals and Substances
See HSEQ Section A.6.5 REACH & COSHH
Control of Substances Hazardous to Health

C.20 Spillage
See Sections 7 Environmental Aspects and 10 Emergency Response Plans
See REACH / COSHH Section A.6.5

C.21 Fire
See Section A.10 Emergency Response Plans
Fire is the most deadly of all marine and shore site hazards – important actions help us mitigate its effects, including, but not limited to:

a) Good housekeeping, keeping work areas tidy, maintaining facilities and infrastructure.
b) Switch off unnecessary electrical appliances.
c) Use of low voltage transformers for power tools.
d) Observing REACH / COSHH regulations.
e) Observing “Hot Work” policies and use of Hot Work permits.
f) Keeping fire watch after welding and burning work.
g) Reporting and the repair of electrical defects.
h) Period inspection and testing of electrical installations.
i) Portable electrical equipment inspection and testing (PAT testing).
j) Safe management and isolation of 3 phase systems.

C.22 Security
SmartBay observe the requirements of the International Ship and Port Facility Code requirements which is obligatory in ports and onboard ships of over 500 gross tonnes or which are deemed to be risk assessed, for example vessels that are licensed to carry more than 12 “passengers” which could include scientists and technicians on research vessels.
SmartBay protect their assets and client property by installing and implementing appropriate site and IT systems security which includes wave energy data networks where practicable.

C.23 Medical Facilities and First Aid
SmartBay provide training for staff who have volunteered to be first aiders. Technicians working on site offshore also have Basic Offshore Safety Induction Emergency Training (BOSIET) or equivalent approved STCW Personal Survival Techniques, or basic offshore safety training. See Table A.8.4.2.
SmartBay has inactive procedures for monitoring occupational health as part of the surveillance programme should risk factors change and it is deemed necessary. However sickness and absenteeism are assessed on a case by case basis to ensure that any evidence of occupational health issues are identified. SmartBay personnel who visit sites on boats and who work from ships undergo
regular Seafarer Medical examinations and certificate and should hold current Irish ENG11 certification or European / International ENG1 or equivalent.

C.24 Safety Equipment

SmartBay has procedures for the management of safety equipment inventories. The system requires period inspections, servicing and testing of safety equipment including *(inter alia)*:

   a) Inflatable life jackets.
   b) Dry and west suits.
   c) Harnesses, fall arresters and safety lines and restraining lanyards.
   d) Fire extinguishers.
   e) Portable radios.
   f) Personal Locator Beacons.

SmartBay has not provided atmosphere testers since enclosed space entry is prohibited.

All inspections, defect reporting and maintenance of safety equipment is documented and recorded.

Where SmartBay bareboat charters in a small workboat the skipper must not sail without a water proof CE approved dual channel hand held VHF radio with Digital Selective Calling (DSC) and the skipper or crew member should have the required VHF Short Range training. The operator, SmartBay, must request a VHF licence from the Irish Commission for Communications Regulation.

C.25 Subsea Operations

See Section B.12 Diving operations.

Diving hazards are extremely dangerous. SmartBay does not provide diving services. Dive services are either contracted by the client directly or contracted out by SmartBay. In some cases main contractors may sub-contract diving services to meet their needs.

Hazards will depend entirely on the nature of the dive, the working being carried out, the dive conditions including depth of water.

The SmartBay test site at Spiddal, lies outside Galway Harbour limits.

SmartBay prohibit all diving in the wave energy test area and only permit contractors to dive if their dive plans are approved by the Designated Person or deputy. Diving within Harbour Limits requires the authority of the Harbour Company and SmartBay management.

Example: when diving in the dock to inspect and or repair submerged parts of a buoy or device.

C.26 Breakaways – buoys and floating devices

Considerable safety hazards and quantifiable risk to the environment occurs if a data buoy or wave energy test device breaks away from its moorings. Such break always might be caused by:

   a) Defective mooring equipment or strong points on the device.
   b) Strong tides combined with Heavy seas.
   c) Contact by a large craft.
   d) Criminal act.
   e) Loss of moorings during deployment, shifting or decommissioning.
   f) Fouling of moorings by a larger vessel.
   g) Failures in the rigging of moorings (e.g. shedding of thimbles from eyes in synthetic mooring lines allowing wearing to take place eventually cutting through the pennant).
   h) Loss of ballast weights (keel) on data buoys.

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i) Floating devices taking on water and sinking due to structural failure or loss of watertight integrity.

Control measures such as underwater inspections should be built into projects where devices are moored for long periods of time.

(Note Emergency Response Planning Section A.10)
Table of Correspondence: SmartBay HSEQ and RenewableUK Wave & Tidal Health and Safety Guide 2014.

Principal elements

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Note: The above represent the most relevant sections of the HSEQ- however there are other references not included here.