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ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED FOR  
THE PROPOSED UNDERWATER HULL CLEANING, WALVIS BAY,  
ERONGO REGION



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## DOCUMENT INFORMATION

<b>DOCUMENT STATUS</b>	<b>DRAFT</b>
<b>APPLICATION NO</b>	
<b>PROJECT TITLE</b>	Environmental Management Plan For The Proposed Underwater Hull Cleaning,
<b>CLIENT</b>	KWINT Offshore Services Namibia (PTY) Ltd
<b>PROJECT CONSULTANT</b>	Mr. Ipeinge Mundjulu
<b>LOCATION</b>	Walvis Bay, Erongo Region
<b>DATE</b>	28 July 2020
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## **ACRONYMS**

<b>BCLME</b>	Benguela Current Large Marine Ecosystem
<b>DEA</b>	Department of Environmental Affairs
<b>EA</b>	Environmental Assessment
<b>EAP</b>	Environmental Assessment Practitioner
<b>ECC</b>	Environmental Clearance Certificate
<b>EIA</b>	Environmental Impact Assessment
<b>EMA</b>	Environmental Management Act (No. 7 of 2007)
<b>EMP</b>	Environmental Management Plan
<b>IMO</b>	International Maritime Organisation
<b>MEFT</b>	Ministry of Environment Forestry and Tourism
<b>MEFT</b>	Ministry of Environment and Tourism
<b>MFMR</b>	Ministry of Fisheries and Marine Resources
<b>MWT</b>	Ministry of Works and Transport
<b>NAMPORT</b>	Namibian Port Authority
<b>PPE</b>	Personal Protective Equipment
<b>RD</b>	Red-Dune Consulting CC
<b>SM</b>	Site Manager

## **Executive Summary**

KWINT Namibia is providing a cross cutting technology for underwater hull cleaning called “HullWiper”. HullWiper technology uses a Remotely Operated Vehicle (ROV), which is diver-free, cost-effective and environmentally friendly solution for underwater hull cleaning. The ROV uses adjusted pressure saltwater jets, instead of brushes or abrasives to remove and collect biofouling with no damage to anti-fouling coatings. Because no divers are used, there is no risk to human life. To ensure that the technology is ecologically safe, the removed residues (biofouling materials) are collected by the ROV’s unique onboard filter and deposited into dedicated drums onboard which are to be disposed of in an ecologically and environmental safe disposal manner. This technology has been dubbed as the future of underwater hull cleaning.

## **1. Overview**

This Environmental Management Plan (EMP) is developed for the proposed operation of a HullWiper technology for the management of biofouling.

## **2. Purpose of the EMP**

This Environmental Management Plan (EMP) is a risk strategy that contains logical frameworks, monitoring programmes, mitigation measures and management control strategies to minimize environmental impacts. It further stipulates the roles and responsibility of persons involved in the project. These strategies are developed to reduce the levels of impacts of the project.

## **3. Compliance to the EMP**

This EMP is a legally binding document as given under the provisions of the Environmental Management Act, 2007 (Act No. 7 of 2007). KWINT Offshore Services Namibia (Pty) Ltd and its contractors must adhere to the framework of this document

## **4. Roles and Responsibility**

### **4.1. Proponent**

The proponent. KWINT Offshore Services Namibia (Pty) Ltd shall take overall responsibility for proper implementation of the EMP. It remains the responsibility of the proponent to appoint key personnel for the implementation of the EMP such e.g. Site Manager and ensure that all employees and contractors are conversant with the EMP.

## **4.2. Site Manager**

The Site Manager (SM) represents the proponent on site. He/she shall be responsible for daily activities in ensuring environmental protection. All communication with regard to the implementation of EMP must be channelled through the SM

## **4.3. Employees**

It shall be responsibility of employees to adhere to the provision of the EMP at all times when on site.

## **4.4. Environmental Compliance Officer**

Compliance to EMP is enforced by the environmental inspector as provided for under Environmental Management Act (No. 7 of 2007) (EMA)

## **5. Disciplinary Action**

This EMP is a legally binding document, non-compliance to the EMP is punishable in accordance to the provisions of EMA

## 6. Policy, Legal and Administrative Framework

**Table 1.** Regulatory framework applicable to the project

Legislation	Summary
The Namibian Constitution	The Namibian constitution is the supreme law of the country which is committed to sustainable development. Article 95(1) of the Constitution of Namibia states that:- “The State shall actively promote and maintain the welfare of the people by adopting policies aimed at... The maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future”.
The Environmental Management Act No 7 of 2007	The Environmental Management Act No 7 of 2007 aims to promote the sustainable management of the environment and the use of natural resources and to provides for a process of assessment and control of activities which may have significant <b>effects</b> on the environment; and to provide for incidental matters. The acts provide a list of activities that may not be undertake without an environmental clearance certificate.  Further, the Act ensures that; <ul style="list-style-type: none"> <li>(a) Potential threats are considered timeously</li> <li>(b) Decision are robust by taking into account the above mentioned activities</li> </ul>
Marine Resource Act (Act No. 27 of 2000)	Provide for the conservation of the marine ecosystem and the responsible utilization, conservation, protection and promotion of marine resources on a sustainable basis; for that purpose to provide for the exercise of control over marine resources; and to provide for matters connected therewith.

Legislation	Summary
Namibian Ports Authority Act 2 of 1994	Provides for the establishment of the Namibian Ports Authority to undertake the management and control of ports and lighthouses in Namibia and the provision of facilities and services related thereto; and to provide for matters incidental thereto.
Marine Traffic Act, No. 2 of 1981 as amended by the Marine Traffic Amendment Act 15 of 1991.	To amend the Marine Traffic Act, 1981, in order to adjust its provisions in view of the independence of Namibia; and to provide for incidental matters.
Prevention and Combating of Pollution of the Sea by Oil Act No 6 of 1981 (as amended by Act 24 of 1991).	To provide for the prevention and combating of pollution of the sea by oil; to determine liability in certain respects for loss or damage caused by the discharge of oil from ships, tankers or offshore installations; and to provide for matters connected therewith.
Dumping at Sea Control Act 73 of 1980.	To control the dumping of substance in the sea
Environmental Policy framework (1995)	This policy subjects all developments and project to environmental assessment and provides guideline for the Environmental Assessment. Its provision mandate that Environmental Assessment take due consideration of all possible impacts and incorporate them in the development or planning stages.
Draft Pollution Control and Waste Management Bill	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management. The Bill will repeal the Atmospheric Pollution Prevention Ordinance (11 of 1976) when it comes into force. The Bill also provides for noise, dust or odor control that may be considered a nuisance. Further, the Bill advocates for duty of care with respect to waste management affecting humans and the environment and calls for a waste management licence for any activity relating to waste or hazardous waste management.

Legislation	Summary
Regulations Relating to the Health and Safety of Employees at Work. Reg No. 156	Sets out the duties of the employer, welfare and facilities at the workplace, safety of machinery, hazardous substances, physical hazards, medical provisions, construction safety and electrical safety.
Labour Act No. 11 of 2007	This Act outlines the labour laws which encompass protection and safety of employees at work.
Public Health Environmental Act No. 1 of 2015	To promote public health and wellbeing as well as prevent diseases, injures and disabilities. Protect individuals and communities from public health risks.
Water Resources Management Act (2013)	This Act provides a framework for managing water resources based on the principles of integrated water resources management. It provides for the management, development, protection, conservation, and use of water resources. Furthermore, any watercourse on/or in close proximity to the site and associated ecosystems should be protected in alignment with the listed principles.
Water Act No, 54 of 1956	<p>This act states that, all water resources belongs to the State. It prevents pollution and promotes the sustainable utilization of the resource. To protect this resources, this act requires that permits are obtained when activities involve the following;</p> <ul style="list-style-type: none"> <li>(a) Discharge of contaminated into water sources such as pipe, sewer, canal, sea outfall and</li> <li>(b) Disposal of water in a manner that may cause detrimental impact on the water resources</li> </ul>

Legislation	Summary
Petroleum Product and Energy Act No, 13 of 1990	This Act provides a framework for handling and distribution of petroleum products which may include purchase, sale, supply, acquisition, possession, disposal, storage or transportation thereof.
Hazardous Substances Ordinance 14 of 1974;	To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances
Marine Traffic Act 2 of 1981 (as amended by the Marine Traffic Amendment Act 15 of 1991);	To regulate marine traffic in Namibia and to provide for matters connected therewith.
Territorial Sea and Exclusive Economic Zone of Namibia Act 3 of 1990;	To determine and define the territorial sea, internal waters, contiguous zone, exclusive economic zone and continental shelf of Namibia; and to provide for matters incidental thereto
<b>INTERNATIONAL CONVENTION AND TREATIES</b>	
International Maritime Organization (IMO)	is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.
Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (Biofouling Guidelines) (resolution MEPC.207(62))	These guidelines under IMO are intended to provide a globally consistent approach to the management of biofouling, which is the accumulation of various aquatic organisms on ships' hulls. They were adopted by the Marine Environment Protection Committee (MEPC) at its sixty-second session in July 2011 and were the result of three years of consultation between IMO Member States. The Biofouling Guidelines represent a decisive step towards reducing the transfer of invasive aquatic species by ships.

Legislation	Summary
United Nations Convention on the Law of the Sea (UNCLOS) (1982)	Namibia is a signatory to UNCLOS which gives provision to claims rights within a 12 nautical mile territorial water and a 200 nautical mile Exclusive Economic Zone (EEZ).
International Convention for the Prevention of Pollution from Ships (MARPOL) London, 1973	This is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.
Convention on Biological Diversity (CBD)	<p>The Convention on Biological Diversity (CBD) entered into force on 29 December 1993.</p> <p>It has 3 main objectives:</p> <ol style="list-style-type: none"> <li>1. The conservation of biological diversity</li> <li>2. The sustainable use of the components of biological diversity</li> <li>3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources</li> </ol>

## 7. The EMP table

This EMP looks into the operational stage of the technology, since this is an imported technology and construction does not take place in Namibia.

### 7.1. Operational Phase

#### 7.1.1. Human Environment

Environmental / Social Impact	Objectives	Proposed Mitigation Measures	Monitoring Indicator	Party Responsible
<b>Employment</b>	To ensure that locals benefit from the employment opportunities to be created during operation of the project.	<ol style="list-style-type: none"> <li>1. Ensure that all general work is reserved for local people unless under circumstances where specialized skills are required.</li> <li>2. Fair compensation and labour practises as per Namibian Labour Laws must be followed</li> <li>3. Ensure skill transfer to the locals (very important)</li> <li>4. Use local suppliers for goods and services where possible</li> <li>5. All employees must go through an induction course for the provision of the EMP</li> </ol>	<p>Employee records Labour unrest over unfair compensation</p> <p>Induction minutes, reports and attendance register</p>	Site Manager

<b>Environmental / Social Impact</b>	<b>Objectives</b>	<b>Proposed Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Party Responsible</b>
<b>HEALTH HIV/AIDS, Alcohol and Drug Abuse</b>	To sensitise employees about the danger of alcohol, drugs COVID-19 and HIV/AIDS	<ol style="list-style-type: none"> <li>1. Provide awareness to the employees on danger of alcohol, (HIV/AIDS), COVID-19 and drug abuse</li> <li>2. Provide condoms on site / office</li> <li>3. Provide Personal Protective Equipment for COVID-19 (Face mask, Sanitizer, etc)</li> </ol>	Awareness meeting minutes	Site Manager
<b>Safety</b>	To ensure good health of the employees	<ol style="list-style-type: none"> <li>1. All vessels to be operated on must pass all safety requirement after inspection by the Department of Maritime Affairs,</li> <li>2. Employees must possess a health certificate</li> <li>3. All employees must have safety induction certificate (In Namibia to be obtained from Namibia Fishing Institute (NAMFI).</li> <li>4. All employees must be provided with adequate Personal Protective Equipment (PPE)</li> </ol>	Health Employees fitness certificates Drill reports	Site Manager

7.1.2. Biological Environment

<b>Environmental / Social Impact</b>	<b>Objectives</b>	<b>Proposed Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Party Responsible</b>
<b>Introduction of aquatic alien evasive species</b>	To protect local biodiversity from alien invasion	<ol style="list-style-type: none"> <li>1. All marine fouling and residues must be recovered on-board where they should be filtered and disposed of in an environmentally-friendly manner</li> <li>2. No potentially harmful debris is released into the sea. This is in line with the IMO guideline 7.7 which stated that, “Personnel proposing to undertake in-water cleaning should be aware of any regulations or requirements for the conduct of in-water cleaning, including any regulations regarding the discharge of chemicals into the marine environment and the location of sensitive areas.</li> <li>3. The collected material should be disposed of, in a manner which does not pose a risk to the aquatic environment”. In this case, at the designated municipal waste site.</li> <li>4. The ROV is fitted with light and camera to ensure proper monitoring 24hours. Produce monitoring reports</li> </ol>	Monitoring reports	Site Manager

<b>Environmental / Social Impact</b>	<b>Objectives</b>	<b>Proposed Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Party Responsible</b>
		5. Undertake biological analysis of water intake and effluent to assess the possibility of the presence alien invasive biological material into the local environment.		

### 7.1.3. Bio-Physical Environment

<b>Environmental / Social Impact</b>	<b>Objectives</b>	<b>Proposed Mitigation Measures</b>	<b>Monitoring Indicator</b>	<b>Party Responsible</b>
<b>Chemical from anti-fouling coating and paints</b>	To protect chemical accumulation in local sediments	<ol style="list-style-type: none"> <li>1. Adhere to IMO guideline 7.8, which states that “for immersed areas coated with biocidal anti-fouling coatings, cleaning techniques should be used that minimize release of biocide into the environment”</li> <li>2. Ensure, adequate monitoring of chemical composition of water intake and effluent is implemented.</li> </ol>	Monitoring report	Site Reports

## **8. Closure / Decommissioning Plan**

The ROV for the HullWiper is like any other mechanical components of robotic technology. Decommissioning will not be applicable. At the end of the ROV life, the dismantling and disposing of mechanical parts must be in conformity with national laws.

## **9. Conclusions and Recommendations**

### **9.1. Conclusion**

Cross cutting technology is essential in improving socio-economic and environmental protection. The ocean is crucial to life on earth, it provides food for millions of people around the world and regulate weather patterns among many. The United Nations General Assembly in accordance with its resolution 63/111 of 5 December 2008, passed a resolution officially recognizing 8 June as World Oceans Day to celebrate our world ocean and our personal connection to the sea. World Oceans Day seeks to remind and encourage the global community to take actions that contribute towards the conservation of the ocean.

The ocean is vital to the world's economy, with more than 90% of trade using sea routes. Resource such as oil & gas and minerals such as diamonds are found on seabed. Furthermore, ocean based tourism activities are increasingly popular with increasing cruise ships.

The world therefore need to be innovative through cutting edge technology to ensure that our ocean consumption is not detrimental to the ocean. This is in line with the HullWiper technology which seek to ensure environmental sustainability and enhance our socio-economic environment.

### **9.2. Recommendations**

It is recommended to the approving authority that KWINT Offshore Services Namibia (Pty) Ltd is granted an Environmental Clearance Certificate for the proposed operation of a HullWiper technology subject to the following condition.

- i. Adequate monitoring of effluent to determine its composition is implement

- ii. Proper implementation of the Environmental Management Plan to ensure environmental protection,
- iii. Obtain all necessary permits and certifications from relevant authority,
- iv. Undertake bi-annual environmental audits.

## 10. References

1. BCLME State of the Marine Environment Report., (2014-18)
2. Bianchi G et al., (1999), Field Guide To The Living Marine Resources Of Namibia
3. Dive Solutions Ltd 2008., Status REPORT. Monitoring of water and Sediments During Hull Cleaning Operations In Port Louis
4. Focus on IMO 2002., Anti-fouling systems
5. Government on New Zealand 2011, Draft Anti-fouling and In-water Cleaning Guidelines, MAF Discussion Paper No: 2011/13
6. Lynne J. Shannon *et al.*, (2004), Simulating anchovy–sardine regime shifts in the southern Benguela ecosystem; *Ecological Modelling* 172 pp 269–281
7. Maria Cecilia Trindade de Castro 2013., International Maritime Organization (IMO) for the Control and Management of Ship's Biofouling to Minimize the Transfer of Invasive Aquatic Species, Conference Paper July 2013
8. Maureen E Callow and James A Callow 2002., Marine Biofouling a sticky problem *Biologist* (2002) 49 (1)
9. Namibian Statistically Agency., (2011) Namibia Population and Housing Census Main Report.
10. NAMPORT Annual Report 2018/19
11. Resolution Mepc.207(62) 2011 Guidelines For The Control And Management Of Ships' Biofouling To Minimize The Transfer Of Invasive Aquatic Species Adopted On 15 July 2011
12. Schultz, M. P., Bendick, J. A., Holm, E. R. and Hertel, W. M. (2011) 'Economic impact of biofouling on a naval surface ship', *Biofouling*, 27: 1, 87 — 98, First published on: 14 December 2010
13. Sonia Gorgula., 2015 Vessel in-water cleaning in Australia
14. The Hydrex Group 2011., WHITE PAPER Clean Ship Hulls and Ports – Without Compromise. Best approach to safeguarding of the marine environment through correct hull protection and maintenance
15. [www.hullwiper.co](http://www.hullwiper.co)
16. International Standard Organisation (ISO) ISO 4706, 2008., Gas Cylinders – Refillable Welded Steel Cylinder – Test Pressure 60 Bar and Below
17. Guide to Good Industry Practises for LP Gas Cylinder Management

18. M/S. Sv Enviro Labs & Consultants 2019., Environmental Impact Assessment Report for Proposed construction of new LPG Bottling Plant, Indiane LPG Bottling Plant, Umiam, Near Shillong, Ri-Bhoi, Meghalaya
19. Ultra Tech Environmental Consultancy and Laboratory 2017., Environmental Impact Assessment Report For Proposed LPG Bottling Plant Village: Phoos Mandi Bathinda, Punjab Bagch R. *et al* 2018., Impacts on Environmental Components of the Proposed Liquefied Petroleum Gas Bottling and Distribution Plant at Dacope Khulna in Bangladesh J. Environ. Sci. & Natural Resources, 11(1&2):171-181, 2018
20. Directory; Storage Incident Frequencies”, Report No. 434-3, March 2010.
21. Environmental Impact Assessment Study Report For The Proposed Installation Of 1100 Cubic Metres Of Liquefied Petroleum Gas Storage And Filling Plant On Lr Mombasa/Block Xlvii/173, Comarco Supply Base, Ganjoni Mombasa County
22. Environmental Impact Assessment Study for the Proposed Construction of Additional LPG Import Pipeline & Phase 1C Bulk LPG Mound at AGOL Terminal on Plot L.R. No. MN/VI/4838 in Miritini, Mombasa County
23. Environmental Management Plan for the Proposed Expansion of Liquefied Petroleum Gas (LPG) Storage Facility Krugersdorp (March 2015)
24. Fire and Safety Analysis Manual for LP-Gas Storage Facilities 2015
25. Guide to Good Industry Practices for LP Gas Cylinder Management
26. Guidelines for Good Safety Practices in the LP Gas Industry 2008
27. International Association of Oil & Gas Producers, “OGP Risk Assessment Data
28. International Standard Organisation (ISO) ISO 4706, 2008., Gas Cylinders – Refillable Welded Steel Cylinder – Test Pressure 60 Bar and Below
29. M/S. Sv Enviro Labs & Consultants 2019., Environmental Impact Assessment Report for Proposed construction of new LPG Bottling Plant, Indiane LPG Bottling Plant, Umiam, Near Shillong, Ri-Bhoi, Meghalaya
30. The Fire Protection of Pressurized Liquefied Flammable Gas Storage: Report prepared by Hedley Jenkins for the EPSC Fire Protection of Flammable Gas Storage and the Prevention of BLEVEs Contact Group
31. Ultra Tech Environmental Consultancy and Laboratory 2017., Environmental Impact Assessment Report For Proposed LPG Bottling Plant Village: Phoos Mandi Bathinda, Punjab