



Guidance for vessel owners: developing a Biofouling Management Plan

Introduction

The purpose of this document is to provide guidance for vessel owners or operators developing a Biofouling Management Plan (BFMP). BFMPs should be specific to the vessel, and should include specific details and schedules of planned management activities. Management activities detailed in the BFMP should be based on best practices as outlined in the [International Maritime Organisation \(IMO\) Biofouling Guidelines](#).

The [BFMP template](#) used in this guidance was developed by the Institute of Marine Engineering, Science & Technology (IMarEST), and includes fields that correspond to the requirements outlined in the IMO Biofouling Guidelines. As this template shows, BFMPs need only include specific information regarding the biofouling management actions to be taken by the vessel, and do not require background information (i.e. IMO Guidelines) or copies of biofouling regulations to be included as part of the plan.

Under the [Craft Risk Management Standard for Biofouling \(CRMS\)](#), all vessels arriving in New Zealand from May 2018 will need to show proof of biofouling management in one of the following ways:

- Provide documentation that the vessel has managed biofouling using best practice
- Provide documentation that the vessel has been cleaned less than 30 days prior to arrival in New Zealand (or within 24 hours of arrival to New Zealand, at an approved facility)
- Application of an MPI-approved treatment

A BFMP can be used as evidence that a vessel has managed biofouling using best practice, provided that:

- The BFMP outlines detailed management actions that are in line with the IMO Biofouling Guidelines
- The vessel also maintains a Biofouling Record Book (BFRB), in which all biofouling management activities are logged, and verifiable documentation of these activities (i.e. antifouling certificates, hull inspection reports, etc.) are stored.

Acronyms used in this document

- **AFS**- Antifouling System
- **BFMP**- Biofouling Management Plan
- **BFRB**- Biofouling Record Book
- **CRMS**- Craft Risk Management Standard for Biofouling
- **DFT**- Dry Film Thickness
- **IMarEST**- Institute of Marine Engineering, Science and Technology
- **IMO**- International Maritime Organisation
- **LR**- Lloyd's Register
- **MGPS**- Marine Growth Protection System
- **MPI**- Ministry for Primary Industries

BIOFOULING MANAGEMENT PLAN

In accordance with Appendix I of MEPC Resolution MEPC.207 (62) of 2011:
'Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species'
Any management action undertaken should be recorded in the Biofouling Record Book.

Ship particulars

Ship's name	
Flag State	
Port of registry	
IMO number	
Gross tonnage	
Type (LR classified)	
Regulation length	
Beam	
International call sign and MMSI	
Ship owner (current)	

See Table 1 (page 19) of IMO Guidelines for a list of ship types, as classified by Lloyd's Register

IMO Guidelines, including guidelines for BFMPs, can be found here: [http://www.imo.org/en/OurWork/Environment/Biofouling/Documents/RESOLUTION%20MEPC.207\[62\].pdf](http://www.imo.org/en/OurWork/Environment/Biofouling/Documents/RESOLUTION%20MEPC.207[62].pdf)

A copy of this template can be found here: <https://www.imarest.org/policy-news/institute-news/item/3506-imarest-and-ippic-launch-template-for-biofouling-management-plan>

The BFMP should include **specific** details regarding:

- The vessel's operating profile
- Diagram and list of all niche areas on vessel, and detailed management actions for each
- AFS and MGPS fitted, and location of each
- Maintenance of AFS and MGPS required for effective performance
- Frequency and procedures for specific biofouling management actions
- Detailed and specific contingencies for when the vessel falls out of its operational profile
- Detailed procedures and safety considerations for regular in water maintenance
- Location and requirements of all records regarding biofouling management (i.e. biofouling record book, AF certificates, hull inspection and cleaning reports, etc)

The BFMP **should NOT** include:

- Copy and paste of the IMO guidelines
- Copies of local biofouling regulations
- Generic (i.e. not specific to the vessel) information on biofouling management

The above can be included as an appendix if necessary, but should not be part of the actual plan.

AFS specification particulars/operating profile

Typical operating speed (knots)	
Period underway / activity (%)	
Expected lay-up periods (anchored, moored) (weeks) (location)	
Typical operating region or trading routes	
Planned duration between dry-docking / slipping	
Expected dry-docking country (if known)	
Dry-docking and maintenance history	<i>See Biofouling Record Book</i>

This section should describe the vessel’s operating profile, including:

- Typical operating speed
- Periods underway compared to periods static
- Typical operating areas or trading routes
- Planned duration between dry dockings
- Any expected lay-up periods >10 days.

The operating profile should determine the performance specifications of the vessel’s AFS and operational practices.

Description of areas on the Ship susceptible to biofouling

Areas particularly susceptible to biofouling *[Please indicate on the diagrams the areas particularly susceptible to biofouling, including niche areas and seawater systems access points in the internal seawater systems]*



Identify the niche areas relevant for the ship in question in the table below (Tick as appropriate). Include other niche areas as required:

General hull and appendages	Niche areas
<input type="checkbox"/> Flat-bottom	<input type="checkbox"/> Sea chests
<input type="checkbox"/> Vertical sides	<input type="checkbox"/> Inlet gratings
<input type="checkbox"/> Bow dome	<input type="checkbox"/> Sea inlet pipes
<input type="checkbox"/> Boot-top	<input type="checkbox"/> Bow and stern thruster
<input type="checkbox"/> Bilge keels	<input type="checkbox"/> Propeller and shaft
<input type="checkbox"/> Stabilizer fins	<input type="checkbox"/> Rope guards
<input type="checkbox"/> Rudder	<input type="checkbox"/> Box coolers
<input type="checkbox"/> Dock block positions	<input type="checkbox"/> Moon pools
<input type="checkbox"/> A-bracket/stern tube	<input type="checkbox"/> Free-flood spaces / voids
<input type="checkbox"/> Cathodic protection anodes and systems	<input type="checkbox"/> Other:
<input type="checkbox"/> Draft and hull markings	

This section should specify the hull areas, niche areas and seawater cooling systems particularly susceptible to biofouling, with an **emphasis on niche areas**.

A list of **all niche areas** present on the vessel should be included in this section, and location of these areas should be indicated in the diagram.

If a more detailed diagram of the vessel/niche areas is available, insert it here. The diagram should show both sides and bottom view of the vessel.

Description of the anti-fouling systems

DFTD	Area / Location applied and Date of Application	Dry Film Thickness	Expected Life time	Manufacturer	If requirements for cleaning - method should be specified	AFS Certificate (Y / N)
Products(s) / systems applied¹ <i>[Enter details of the coating applied for each section of the ship – hull and niche area. For sea chests, indicate function and if MGPS dosed, or containing box coolers]</i>						
Detail any immersed areas where AFS are not applied or installed						
Marine Growth Prevention Systems ² (MGPSs) Dosing frequency						
List seawater systems without fitted MGPSs, and presence and location of box						
Operating profile required for each AFS to be effective						
Other specifications relevant for AFS performance, if any						
Previous reports on AFS performance (if available)						

¹ This section can be completed using the AFS 'specification' or warranty document provided by your AFS supplier.

² This section should be completed in collaboration with your MGPS provider

³ Product data sheets should be attached as an appendix

This section should describe the antifouling systems in place for different parts of the vessel, including:

- Types of AFS applied
- Locations on the vessel where AFS are not applied or installed
- Manufacturer and product names of all AFS
- System specifications
 - Dry film thickness for AFS
 - Dosing and frequency for MGPS
 - Expected effective life
 - Operating conditions required for coatings to be effective
 - Cleaning requirements
 - Any other specifications

Previous reports on the performance of the AFS should be included, if applicable, and the AFS certificate or statement of compliance or other documentation should also be referenced. These documents can be stored in the biofouling record book.

When selecting an AFS, be sure to speak with the manufacturer about your vessel's operating profile in order to select the most effective system. Ensure that the AFS is applied as per the manufacturer's specifications (i.e. correct DFT, under acceptable environmental conditions, etc.). This section should also list any cleaning or maintenance procedures recommended by the manufacturer to maintain the AFS between dry dockings.

Often, different parts of the hull will require different types of AFS. Speak with the manufacturer about selecting the appropriate coating for all hull and niche areas. List all coatings used on the vessel, and the location where they are applied, here.

Biofouling management action plan to minimise the transfer of invasive aquatic species

Ship area <i>(To be completed for areas particularly susceptible to biofouling – see previous)</i>	Planned management action and frequency <i>(e.g., inspections, cleaning, repairs and maintenance)</i>	Management action if ship operates outside its usual operating profile
Hull		
Vertical		
Flat-bottom		
Docking block positions		
Boot-top		
Bow dome		
Hull appendages and fittings:		
Bilge keels		
A-brackets		
Stabilizer fins		
CP anodes		
Steering, propulsion and positioning:		
Propellers		
Stern tube seal		
Rope guards		
Propulsor body and ring		
Anchor and chain		
Chain locker		
Rudder		

This section should identify all hull and niche areas present on the vessel, and detail the **specific** management actions required for each area, including the **frequency*** of the actions.

The actions detailed in this section should include:

- Frequency of inspections
- Frequency of proactive grooming of the slime layer
- Maintenance of MGPS
- Specific cleaning procedures for hull and niche areas if biofouling is found
- Frequency of propeller polishing
- Frequency of anode inspection and replacement

This section **should NOT** include:

- Information on the construction of hull and niche areas
- Vague management actions with no frequency specified (i.e. “cleaning as necessary”)

This sections should also describe **contingencies** for the actions to be taken if the vessel operates outside its usual operating profile or if excessive biofouling is observed, and the **specific** circumstances under which these contingencies will be exercised (i.e. full hull inspection and cleaning following any lay up of >10 days).

Any other actions that can be taken to minimize the accumulation of biofouling on the ship should also be detailed.

*as a rough estimate, vessels just out of dry dock should have an in-water inspection every year, until they reach the halfway point of their dry docking cycle. Vessels should then have 6 monthly inspections after that. If a vessel falls out of its operational profile, then they need to be more regular. **Always carry evidence from these inspections.**

Ship area <i>(To be completed for areas particularly susceptible to biofouling – see previous)</i>	Planned management action and frequency <i>(e.g., inspections, cleaning, repairs and maintenance)</i>	Management action if ship operates outside its usual operating profile	
Steering, propulsion and positioning (continued):			
Rudder recesses (<u>pintle</u> recesses, lifting tubes etc.)			
Thruster propeller(s)			
Thruster body(s)			
Thruster rope guards / shaftseals			
Tunnel(s)			
Tunnel grates			
Intake and internal seawater systems			
Engine cooling system			
Sea chests			
Emergency fire-fighting system			
Auxiliary services system			
Potable water generation			
Ballast water uptake			
Ancillary systems			
Other systems (<u>itemise</u> each)			

This section should identify all hull and niche areas present on the vessel, and detail the **specific** management actions required for each area, including the **frequency** of the actions.

The actions detailed in this section should include:

- Frequency of inspections
- Frequency of proactive grooming of the slime layer
- Maintenance of MGPS
- Specific cleaning procedures for hull and niche areas if biofouling is found
- Frequency of propeller polishing
- Frequency of anode inspection and replacement

This section **should NOT** include:

- Information on the construction of hull and niche areas
- Vague management actions with no frequency specified (i.e. “cleaning as necessary”)

This sections should also describe **contingencies** for the actions to be taken if the vessel operates outside its usual operating profile or if excessive biofouling is observed, and the **specific** circumstances under which these contingencies will be carried out (i.e. full hull inspection and cleaning following any lay up of >10 days).

Any other actions that can be taken to minimize the accumulation of biofouling on the ship should also be detailed.

Operation and maintenance of the anti-fouling systems

Timing of operational and maintenance activities

Schedule of planned inspections, repairs, maintenance and renewal of AFS

[Redacted content]

This section should contain **detailed** descriptions of the operation and maintenance of the AFS, **schedules** of maintenance activities and **step-by-step** operational procedures.

This section should outline the **specific** schedule of planned inspections, repairs, maintenance and renewal of the AFS.

In-water cleaning and maintenance procedures

Schedule of planned maintenance procedures to be completed between dry-docking events

Treatment / cleaning conducted and detailed operational procedures, chemicals, discharge standards applied to specific areas

[Redacted content]

This section should set out planned maintenance procedures (other than for on board treatment processes) that need to be completed **between dry-docking** events to minimize biofouling. This should include routine cleaning or other treatments. **Details** should be provided on:

- the treatment/cleaning to be conducted
- the specification of any equipment required
- details of the areas to which each specific treatment/cleaning is to be applied
- step-by-step operational procedures where relevant and,
- any other details relevant to the processes (e.g., chemicals required for treatment, any discharge standards).

Operation of on board treatment processes

MGPS fitted, internal seawater systems covered by the system associated maintenance and inspection schedule and procedures

Operational frequency and cleaning / maintenance requirements on completion

[Redacted content]

Whenever possible, proactive cleaning of the vessel's slime layer should be incorporated into a vessel's maintenance programme.

Planned biofouling management if MGPS is temporarily out of operation

Document procedures

[Redacted content]

These sections should provide **specific advice** about MGPS fitted, internal seawater cooling systems covered by the system and any not covered, and the associated maintenance and inspection schedule and procedures. This would include information such as when each MGPS is run, for how long and any cleaning/maintenance requirements of the system once use is finished.

This section should also include advice for ship operators on procedures for biofouling management if the MGPS is temporarily out of operation.

Safety procedures for the ship and crew

Safety procedures to be followed during ship inspections

Details of specific operational or safety restrictions, including those associated with the management system that affects the ship and / or the crew

Specific operational or safety restrictions, including those associated with the management system that affects the ship or crew should be detailed here. This section should also include details of specific safety procedures to be followed during ship inspections.

Disposal of biological waste

Procedures for the disposal of biological waste generated by treatment / cleaning processes

When the cleaning is conducted by, or under the direct supervision of, the ship owner, master or crew

This section should contain procedures for the disposal of biological waste generated by treatment or cleaning processes when the cleaning is conducted by, or under the direct supervision of, the vessel owner, master or crew.

Biofouling record book

Recording requirements

Documentation to be kept to verify operations / treatments

This section should contain details of the types of documentation to be kept to verify the operations and treatments to be recorded in the Biofouling Record Book. This section should also detail the location of all records kept and the crew responsible for maintaining up to date records.

Date of plan (day/month/year)

The plan should be updated periodically based on any changes to the vessel's operational profile, AFS or MGPS fitted, dry docking schedule, or other changes that may require revised biofouling management actions.