

Appendix 4

Vessel hull and niche area inspection - requirements, method and forms

Note: All references in this Appendix to Performance Standards are references to the Performance Standards in Table 1.

This Appendix sets out the inspection process to be followed in Performance Standard 2 to satisfy the requirements of Performance Standard 1.1.⁴⁰

1. Inspection Overview

1.1 General provisions

- (a) Inspections can be undertaken either out-of-water or in-water.
- (b) Inspections must be undertaken ~~by a person approved by the Minister of Conservation~~ by an inspector approved by the Minister of Conservation ("approved inspector" see Appendix 5) in accordance with Performance Standard 2.2 ~~to conduct the type of inspection being undertaken (see Appendix 5).~~
- (c) Inspections must follow the process set out in this Appendix.

Note: It is recommended that the relevant Department of Conservation Director is advised via email to coastalplan@doc.govt.nz in advance of any inspection to avoid the risk of delay, particularly where the inspection may be complex or the vessel is at particular risk.

1.2 Inspection results

- (a) An inspection is a *passed inspection* when that inspection follows the methodology set out in this Appendix and demonstrates compliance with Performance Standard 1.1.
- (b) An inspection is a *failed inspection* when that inspection follows the methodology set out in this Appendix and Performance Standard 1.1 is not complied with.
- (c) Where a failed inspection occurs, *re-inspection(s)* may be undertaken over a 7 day period from the date of the original failed inspection. Re-inspection(s) shall be confined to the area(s) of the hull, including any niche areas, that failed the original inspection.
- (d) Hull cleaning may be undertaken during an inspection and/or during or prior to any re-inspection(s).⁴¹
- (e) Where any re-inspection occurs more than 7 days after the original failed inspection, a new inspection of the entire vessel shall be undertaken.

⁴⁰ The inspection, sampling and reporting protocols included in this appendix are based on recommendations from Floerl, O.; Wilkens, S.; Inglis, G. 2010: Development of a template for vessel hull inspections and assessment of biosecurity risks to the Kermadec and sub-Antarctic Islands regions. NIWA.

⁴¹ Note that any in-water cleaning can only be undertaken in compliance with the relevant regional coastal plan for the region.

~~(f) Notwithstanding Performance Standard 1, where a vessel operator is undertaking an activity lawfully established prior to notification of this plan and the vessel fails an inspection prior to 1 April 2018, that vessel operator may access within 0.54nm~~

~~(1000m) of MHWS of any of the islands, provided that the vessel operator takes all reasonable steps to remove any identified macro-fouling and having regard to the provisions of section 17 of the RMA, minimises any actual or potential adverse effects of that macro-fouling on the island environments addressed by this plan. For the avoidance of doubt, the inspection process otherwise required by rule 29B must still be carried out, Forms 1 and 2 completed and provided in accordance with Performance Standard 2.3.~~

1.3 Record of inspection

~~(a)~~ Inspection results, including re-inspection results, are to be recorded in Forms 1 and 2 ~~and in PDF format~~, and ~~representative photographs taken video and photographs taken provided~~ as set out in this Appendix.

Note: Form 1 records whether a vessel has passed or failed the inspection or re-inspection(s). Form 2 records additional information about the vessel and any biofouling that is found. The information in Form 2 is not used to determine whether the inspection is passed or failed.

- ~~(b)~~ ~~Where an approved~~ The person approved inspector who undertakes an inspection, ~~that person is to must provide complete the completed inspection forms, and videos and photographs Forms 1 and 2 in full and provide the completed Forms, and photographs as required to be taken by this Appendix to the vessel operator as soon as practicable after completion of the inspection. required by this Appendix to the vessel operator as soon as practicable after completion of the inspection.~~
- ~~(c)~~ Completed Forms 1 and 2 and photographs that are representative of what is seen in each listed area must be provided by the vessel operator to DOC via email to coastalplan@doc.govt.nz. Subject to the exceptions at clause 2.1(e)(i), while this Appendix requires a minimum of 3 photos to be taken of most listed areas. A lesser number may be provided to DOC if that is sufficient to be representative of what is seen in the area listed.
- ~~(d)~~ All photos and videos taken must be clearly labelled and cross referenced to Form 2;
- ~~(e)~~ All photos and videos taken must be stored for a minimum of 5 years and must be provided on request at any time within this period.

2. Inspection process

2.1 General provisions

~~(a)~~ Prior to the inspection the vessel operator must provide the approved inspector with ~~a copy~~⁴² iesy of ~~the General Arrangement vessel schematics~~ that to identify the location and number of all niche areas on the vessel. If the vessel has a docking plan showing the arrangement and the number of dry dock support strips, that must also be provided. ~~If for any reason those~~

⁴² Indicating niche area locations and docking plan (i.e. placement of dry-docking blocks).

documents cannot be obtained or are invalid, the vessel operator must document a description of the arrangement to clarify presence or absence and general locations of all niche areas, and discuss this with the approved inspector. A record of all such documentation must be kept and provided on request.

(aa) The approved inspector must identify, and list on Forms 1 and 2, all niche areas on the vessel that:

- (i) for an in-water inspection, are below the waterline; or
- (ii) for an out-of-water inspection, are below the plimsoll line.

Appendix 4A lists common niche areas in order to assist the approved inspector to comply with this requirement. All niche areas listed in Appendix 4A that are present on the vessel must be listed on Forms 1 and 2. Where Appendix 4A lists component parts of a niche area, each component part constitutes a 'niche area' that must be listed on Forms 1 and 2. Appendix 4A is not an exhaustive list - any other niche areas on the vessel that are not in that list must be identified and listed on Forms 1 and 2.

(b) An inspection of a vessel must include **all the hull areas and niche areas listed in Forms 1 and 2** (except as provided for in (c) below). Figure A4 provides a visual representation of the hull areas listed in Forms 1 and 2. Specific requirements for inspections of these areas are set out in 3.1 and 3.2. of Appendix 4, and those forms must be completed in full. This means all niche areas on a vessel's hull that are below the waterline for an in-water inspection, or the plimsoll line for an out-of-water inspection, must be inspected as part of any inspection. If an area listed in Forms 1 and 2 is not inspected, the reason must be recorded.

Valid reasons for excluding locations on the hull that are listed in the forms could be, for example, concerns for human health and safety, risk of damage to equipment, the location not being present on the hull, or the vessel being too small for the number of locations identified in the form.

along vertical and horizontal transects of the vessel's hull and inspections of hull niche areas as set out in 2.2, 2.3 and 2.4 of this Appendix. (These areas are illustrated in Figures A4.1 and A4.2 in this Appendix.)

~~(c) A record of the inspection results for each hull transect and for each niche area present on the hull are to be recorded on Completed Forms 1 and 2, including a record of any fouling that is removed during the inspection or re-inspection(s), are to be provided in PDF format.~~

(d) To provide a permanent record, during any inspection or re-inspection(s) videos and photographs must be taken that are representative of what is seen along each transect of the hull and at each niche area in accordance with requirements set out in Form 2. Where any biofouling is removed during an inspection or re-inspection(s), videos and photographs must be taken that are representative of the fouled area before and after the removal of the fouling. Photographs are to be provided as a PDF report with Form 1 and Form 2. Photographs and videos are to be provided on request. Photographs of the hull transects must be taken at a constant distance of approximately 30 cm from the hull surface for in-water inspections, or as near to this as is practicable. Where the inspection is out-of-water, the photograph must be taken at a distance which ensures the clear depiction of what is observed. Each photograph must include a label identifying the location on the hull that the photograph depicts and a scale bar.

- (c) All reasonable attempts must be made to access and inspect all niche areas on the vessel. If the inspector determines that it is unsafe, would risk damage to equipment or is otherwise not practicable to inspect a niche area, that niche area is not required to be inspected. However, the inspector must describe the specific reason that the niche area is not being inspected on Form 1.
- (d) Where any biofouling is removed during an inspection or reinspection(s), videos and photographs must be taken that are representative of the fouled area before and after the removal of the fouling. Photographs are to be provided as a PDF report with Form 1 and Form 2. Photographs and videos are to be provided on request. Photographs of the hull transects must be taken at a constant distance of approximately 30 cm from the hull surface for in-water inspections, or as near to this as is practicable. Where the inspection is out-of-water, the photograph must be taken at a distance which ensures the clear depiction of what is observed. Each photograph must include a label identifying the location on the hull that the photograph depicts and a scale bar.
- (e) High quality digital video footage and still photographs of all locations areas on the hull listed in Forms 1 and 2 the forms must be taken, regardless of the presence or absence of biofouling, during inspection and re-inspection if one is required. High quality means a level that allows the viewer to identify biofouling to broad taxonomic groups (e.g. barnacles, tube worms, macroalgae). Video and photograph requirements are as follows:
- i. Photographs and videos must be representative of what is seen within each listed area. A minimum of ~~Three~~ photos and a video must be taken no more than 0.5m from the hull, of each location area listed in this Forms 1 and 2 forms, except for the location areas listed in Appendix 4A under "miscellaneous" or other niche areas not inspected under (c) above, where one photograph and one video are required for each location area.
 - ii. Photographs and videos must be taken no more than 0.5m from the hull.
 - iii. The digital cameras used for gathering the evidence must be capable of time and date stamping footage or photos (i.e. the correct date and time must be on the photos). Alternatively, the time and date must be saved as properties associated with the file.
 - iv. Each photo image or video must be labelled to identify the its image's location in relation to the hull during the inspection, e.g. labels on a quadrat frame.
 - v. Each video must be taken at a speed slow enough for the camera to operate in low-light conditions without blurring images in individual frames.
 - vi. In low-visibility environments, the vessel hull approved inspector must use adequate lighting and take additional photographs and footage of targeted areas to ensure photographs and video footage are high quality negate impacts on the quality of evidence.

Note: This may mean the approved inspector needs to take additional photographs and footage to ensure the required number of high-quality photographs and video are taken. Multiple bulb LED lights are advised to achieve the required quality.

~~vii. All reasonable attempts must be made to access and survey all submerged areas as thoroughly as possible.~~

~~viii. Any locations on the hull listed in the forms that are not surveyed must be identified in the forms, along with the reason they were not inspected. (Valid reasons for excluding locations on the hull listed could be concerns for human health and safety, or risk of damage to equipment). If an area listed in the forms as required is not present on the hull, evidence of this should be provided in the report.)~~

- (f) Level of Fouling (LOF) rankings from 0-5 and cross referenced to each photograph ~~are to~~ must be provided in Form 2 by applying the criteria in Figure A4.3 below³.

*Note: For practical guidance and training on how to use the LOF scale go to the Cawthron Institute "LOFeR"*⁴

³ Floerl, O.; Inglis, GJ, Haydon, B. 2005: A risk-based predictive tool to prevent accidental introduction of nonindigenous marine species. *Environmental Management* 35(6): 765-778. A copy is available on the relevant Department of Conservation website.

⁴ <https://cawthron.shinyapps.io/LOFeR/>

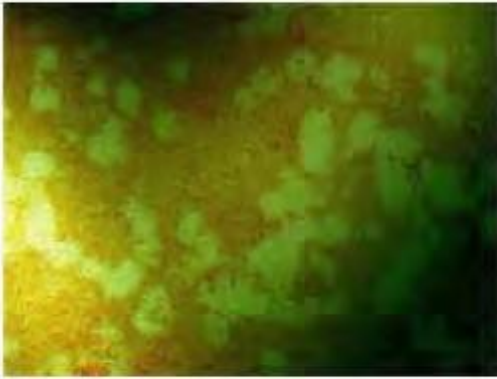
LOF rank	Criteria
0	No visible biofouling. Hull entirely clean, no slime fouling (biofilm) on any visible submerged parts of the hull.
	 
1	Hull partially or completely covered in slime fouling (biofilm). Absence of any macrofouling.
	 
2	Light biofouling. 1–5% of visible surface covered by very patchy macrofouling. Remaining area often covered in slime. Examples below show presence vs. absence of fouling in two adjacent areas of a vessel hull.
	 

Figure A4.3. Definition of the LOF ranks (ranging from 0 to 5) and example images of vessel hull surfaces of each of the different ranks (continued on next page).

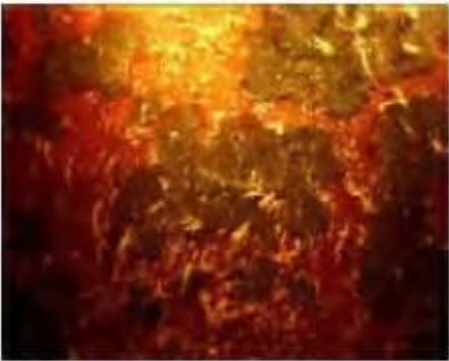
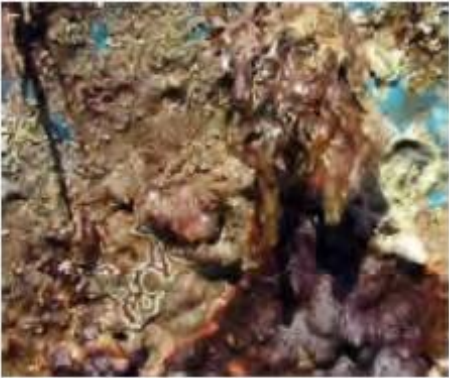
LOF rank	Criteria
3	Moderate biofouling. Macrofouling clearly visible (usually > 1 species) but still patchy. 6–15% of visible hull surface covered by macrofouling. Remaining area often covered in slime.  
4	Extensive fouling. 16–40% of visible hull surface covered by macrofouling, generally with several distinct types of organisms. Remaining area often covered in slime.  
5	Very heavy fouling. 41–100% of visible hull surface covered by macrofouling, often with many distinct types of organisms. Remaining area often covered in slime.  

Figure A4.3—continued.

3. Specific Requirements for Hull Areas

3.1 Water line/plimsoll horizontal transect

- (a) A continuous horizontal transect must be inspected in general accordance with Figure A4 and this Appendix:
 - (i) for an in-water inspection, at the waterline; and
 - (ii) for an out-of-water inspection, at the plimsoll line.
- (b) The inspection must cover a width of at least 1m below the water line or plimsoll line (whichever is relevant).
- (c) Inspection results are to be recorded and photographs and videos taken for the corresponding hull areas listed in Forms 1 and 2 as follows:
 - (i) for the transom - each of the port, starboard and mid areas; and
 - (ii) for the port and starboard – each of the stern, amidship and bow areas.

3.2 Vertical deep and flat bottom

- (a) The vertical deep and flat bottom areas of the hull must be inspected in general accordance with Figure A4 and this Appendix.
- (b) Inspections results are to be recorded and photographs and videos taken for the corresponding hull areas listed in Forms 1 and 2 as follows:
 - (i) for the port and starboard - each of the stern, amidship and bow areas.

~~2.2 Vertical stern transects~~

- ~~(a) Two vertical transects are to be inspected at the stern: one on the port and one on the starboard side.~~
- ~~(b) The vertical transects should generally be situated approximately 5m from the stern, where the hull curves inwards.~~
- ~~(c) The width of observation along each transect shall be at least 1 metre.~~

~~2.3 Horizontal transects~~

- ~~(a) Two horizontal transects are to be inspected along the entire length of the vessel: one on the port and one on the starboard side.~~
- ~~(b) The width of observation along each transect shall be from the waterline for an in-~~
~~water inspection, or the Plimsoll line for an out-of-water inspection, to at least 1 metre below those lines.~~
- ~~(c) Inspection results are to be recorded for the horizontal transect in three separate parts (the stern, amidship and bow), for each side of the vessel.~~

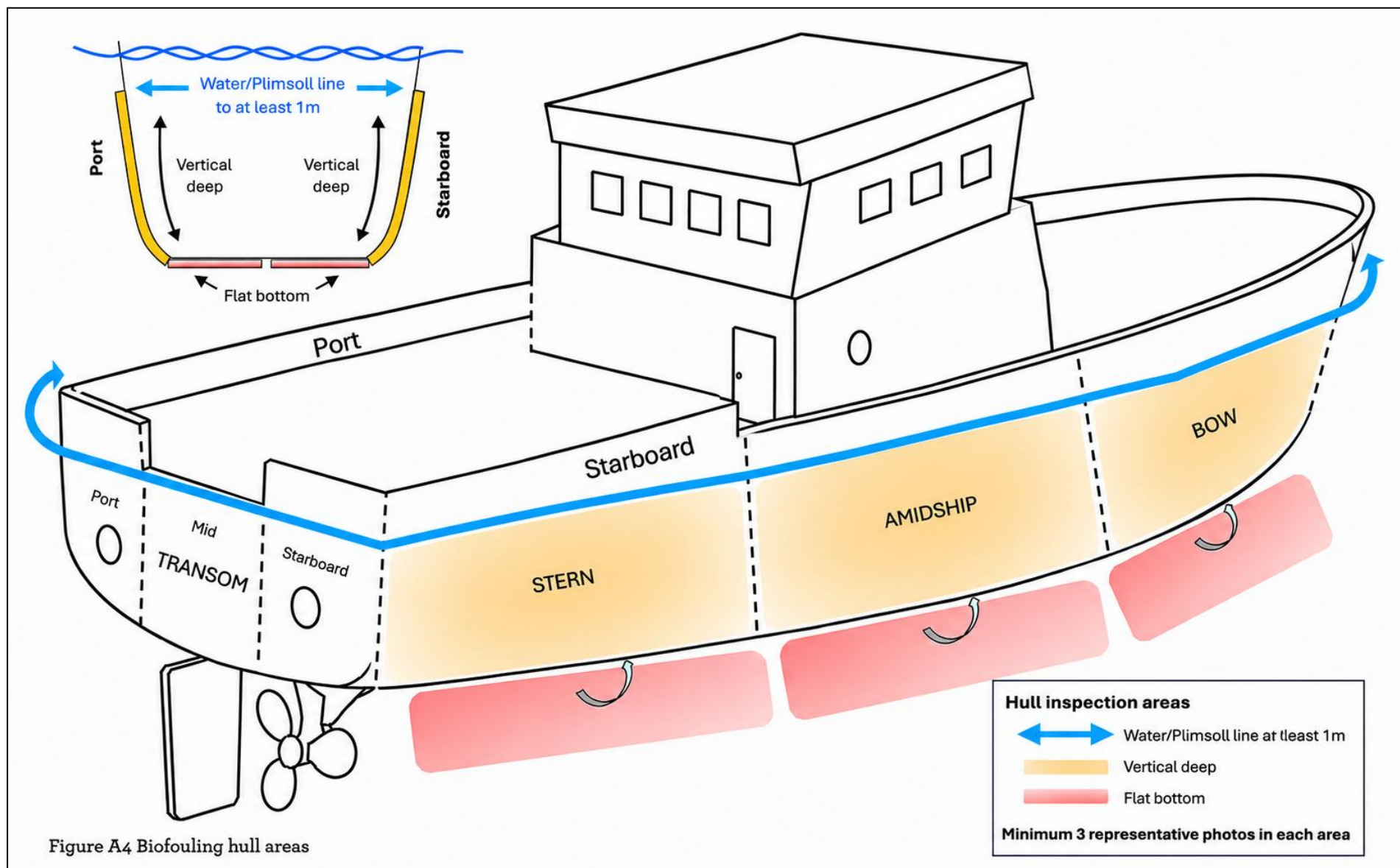
~~2.4 Niche areas~~

~~(a) — All niche areas that are below the waterline for an in-water inspection, or the plimsoll line for an out-of-water inspection, on a vessel's hull must be inspected as part of any inspection.~~

~~Where it is not practicable to access a niche area to inspect part or all of that niche area then for the purpose of this inspection process there is no requirement to inspect the niche area concerned.~~

~~2.523.3~~ 2.523.3 Opportunistic observations - biofouling in other areas

- (a) During an inspection or re-inspection(s) if the inspector observes any biofouling in any location other than the required hull areas ~~transects~~ and niche areas, this must be recorded on Forms 1 and 2 and photographs and video must be taken that are representative of the fouled area in the manner described in 2.1(~~ee~~) and 2.1(d).



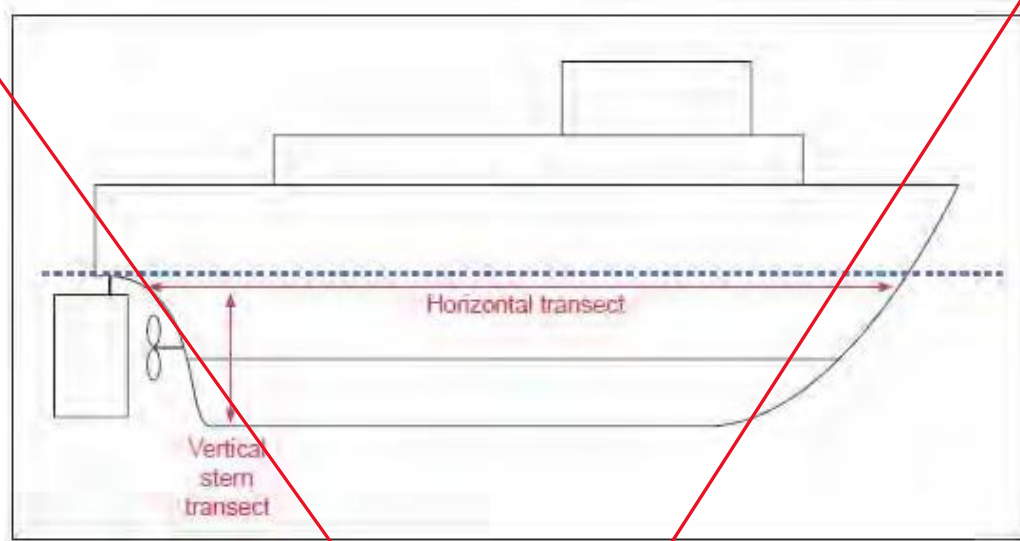


Figure A4.1. Biofouling inspection of general hull areas using vertical stern transects and horizontal transects of both port and starboard areas.

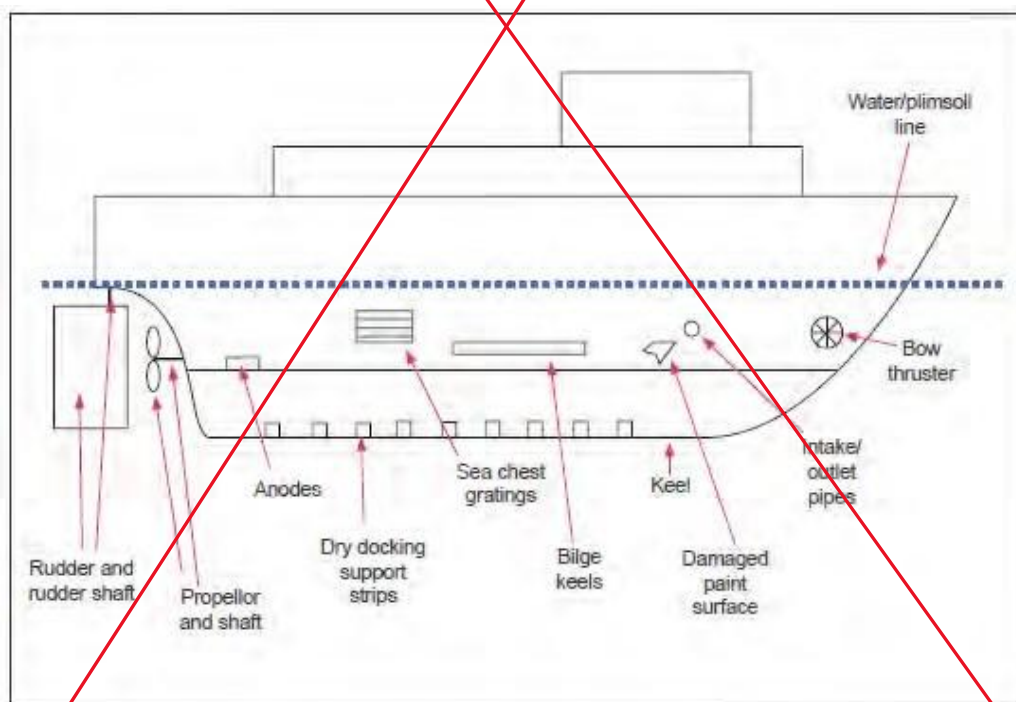


Figure A4.2. Biofouling inspection of niche areas.