



OSPAR Guidelines on Artificial Reefs in relation to Living Marine Resources¹

(Reference number: 2012-3²)

1. Introduction

1. Artificial reefs are used in coastal waters in many regions of the world for a range of coastal management applications. The development of artificial reefs in the maritime area is still in its infancy. Among the uses being examined by the scientific community are:
 - reduction of flooding and coastal erosion;
 - providing sheltered anchorages for shipping and small boats;
 - development of habitat for crustaceans fisheries (e.g. lobsters), particularly in conjunction with juvenile restocking;
 - providing substrate for algae or mollusc cultivation;
 - providing means of restricting fishing in areas where stocks are in need of protection;
 - creating fish aggregation areas for fisheries, sport anglers and diving;
 - replacing habitats in areas where particular substrates are under threat;
 - mitigation for habitat loss elsewhere (e.g. consequence of land reclamation);
 - production of marine resources.
2. These guidelines were adopted in pursuance to Article 6 of Annex II and Article 10(d) of Annex III of the OSPAR Convention, initially in 1999 and reviewed in 2012. Their purpose is to assist Contracting Parties in considering the consequences for the marine environment of the placement of artificial reefs on the seabed. Construction of artificial reefs is one example of 'placement' and the guidelines that follow contain elements that are relevant for a wide range of other coastal and offshore developments that have potential to cause adverse effects in the marine environment and that, therefore, should fall under the control of appropriate national authorities.
3. Article 1(g)(ii) of the OSPAR Convention excludes from the definition of 'dumping' the placement of matter for a purpose other than the mere disposal provided that, if the placement is for a purpose other than that for which the matter was originally designed or constructed, it is in accordance with the relevant provisions of the Convention.

¹ These guidelines are established for the specific purpose of considering the consequences for the marine environment of the placement of artificial reefs on the seabed specifically built for protecting, regenerating, concentrating and/or increasing the production of living marine resources, whether for fisheries or nature conservation. For other purposes reference should be made to the London Convention and Protocol / UNEP Guidelines for the placement of artificial reefs – UNEP Regional Seas Report & Studies No. 187.

² These Agreement replaces Agreement 1999-13

4. In this regard the 'relevant provisions of the Convention' include the general obligations in Article 2, in particular the obligation that Contracting Parties shall, in accordance with the provisions of the Convention, take all possible steps to prevent and eliminate pollution and to protect the marine area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected (Article. 2.1(a)). More specifically, the provisions of Article 5 of Annex II and Article 8 of Annex III which require:
 - (i) authorisation or regulation by the competent authority of the Contracting Parties;
 - (ii) that construction of an artificial reef shall not be taken to permit the dumping otherwise prohibited;
 - (iii) observance of the relevant applicable criteria, guidelines and procedures adopted by the Commission under Article 6 of Annex II and Article 10(d) of Annex III, respectively.
5. In addition to the provisions of these Guidelines, it may be necessary to prepare a formal 'Environmental Impact Assessment' in support of the proposal to fulfil the requirements of parallel legislation (e.g. Council Directive 85/337/EEC on environmental impact assessment as amended by Council Directive 97/11/EC).
6. When designing or constructing artificial reefs, due consideration should be given to relevant national and international legislation and agreements applicable to other areas e.g. waste, nature conservation and fisheries.

2. Definition and Purpose

7. An artificial reef is a submerged structure placed on the seabed deliberately, to mimic some characteristics of a natural reef. It could be partly exposed at some stages of the tide.
8. These guidelines address those structures specifically built for protecting, regenerating, concentrating and/or increasing the production of living marine resources, whether for fisheries or nature conservation. This includes the protection and regeneration of habitats.
9. Any authorisation for the creation of an artificial reef should identify clearly the purposes for which it may be created.

3. Justification and Cost/Benefit Analysis

10. Artificial reefs should only be established if, after due consideration of all socio-economic and environmental costs (e.g. undesirable impacts or alteration), a net benefit can be demonstrated, in relation to the defined objectives. In such assessment of potential effects (which may have to be a formal environmental impact assessment if major impacts cannot be ruled out) the following steps should be followed:
 - a. studies should be carried out that yield the information required to assess:
 - possible impacts of the installation of an artificial reef on the indigenous fauna and flora and the environment of the site and the wider surroundings;
 - the benefits expected to be obtained from the installation of an artificial reef;
 - b. the best alternatives for the design and placement of the artificial reef should be identified. At this stage, the benefits of all options including that of no action should be assessed in relation to their socio-economic and environmental costs;
 - c. before installing an artificial reef, baseline studies should be conducted to provide benchmark data for the subsequent monitoring of the effects of an artificial reef on the marine environment.

4. Requirements for Construction and Placement

4.1 Materials

11. Artificial reefs should be built from inert materials. For the purpose of these guidelines, inert materials are those which do not cause pollution through leaching, physical or chemical weathering and/or biological activity. Physical or chemical weathering of structures may result in increased exposures for sensitive organisms to contaminants and lead to adverse environmental effects.
12. Materials used for the construction of permanent artificial reefs will of necessity be bulky in nature, for example geological material (i.e. rock), concrete or steel.
13. No materials should be used for the construction of artificial reefs which constitute wastes or other matter whose disposal at sea is otherwise prohibited.

4.2 Design

14. Modules for artificial reefs are generally built on land unless they consist solely of natural materials placed in an unmodified form.
15. The materials chosen for the construction of artificial reefs will need to be of sufficient engineering strength, both as individual units and as an overall structure to withstand the physical stresses of the marine environment and not break up, potentially causing serious interference problems over a wide area of seabed.
16. Artificial reefs must also be constructed and installed in such a way as to ensure that the structures are not displaced or overturned by force of towed gears, waves, currents or erosion processes for their objectives to be fulfilled at all times.
17. Artificial reefs should be designed and built in such a way that they could be removed, if required.
18. The design of the artificial reef should strive to achieve its objectives with minimum occupation of space and interference with the marine ecosystems.

4.3 Placement

19. The placement of artificial reefs should be done with due regard to any legitimate activity underway or foreseen in the area of interest, such as navigation, tourism, recreation, fishing, aquaculture, nature conservation or coastal zone management.
20. Prior to placement of an artificial reef, all groups and individuals who may be affected or interested, should be informed on the characteristics of the artificial reef as well as on its location and depth of placement. They should be given the opportunity to make their views known in due time prior to its placement.
21. The location of a proposed artificial reef and the timing of its construction/placement should be carefully considered by the competent body at an early stage in the planning, especially with regard to:
 - distance to the nearest coastline;
 - coastal processes including sediment movement;
 - recreational areas and coastal amenities;
 - spawning and nursery areas;
 - known migration routes of fish or marine mammals;

- sport and commercial fishing areas;
 - areas of natural beauty or significance cultural, historical, or archaeological importance;
 - areas of scientific or biological importance (e.g. protected areas designated under Council Directive 92/43/EEC on the conservation of natural habitats and wild flora and fauna and Council Directive 79/409/EEC on the conservation of birds and under International Conventions or corresponding legislation of other Contracting Parties);
 - shipping lanes or anchorages;
 - designated marine disposal sites;
 - seabed pipelines;
 - military exclusion zones, including ordnance dumpsites;
 - engineering uses of the seafloor (e.g. potential or ongoing seabed mining, undersea cables, desalination or energy conversion sites).
22. While in many cases the aim should be to avoid conflict with the above interests, the management objectives for an artificial reef could be directed specifically at interference, such as discouraging the use of certain types of fishing gear.
23. It will also be important to consider information on the following:
- water depths (maximum, minimum, mean);
 - influence on stratification;
 - tidal period;
 - direction and velocity of residual currents;
 - wind and wave characteristics;
 - impact on coastal protection;
 - influence of the structure on local suspended solid concentrations.
24. The competent authority should ensure that the position, surveyed depth and dimensions of the artificial reef are indicated on nautical charts. In addition, the authority should ensure that advance notice is issued to advise mariners and hydrographic surveying services of the placement.

5. Administrative Action

25. No artificial reef should be placed in the marine environment without authorisation or regulation by the competent authorities.
26. The decision on the installation of an artificial reef should only be taken once the steps stipulated in § 10.a have been completed and the assessment has been evaluated. In this process, due account should be taken of the 'precautionary principle and the best environmental practice'.

6 Monitoring

27. Baseline studies should be conducted to provide benchmark data for the subsequent monitoring of the effects of an artificial reef on the marine environment.
28. The installation of an artificial reef should be followed by a short, medium and long-term monitoring programme in order to verify whether the management objectives are fulfilled and the anticipated net benefits materialise.

29. The monitoring programme should also be aimed at establishing and assessing the environmental impacts and/or conflicts of the artificial reef with other legitimate uses of the maritime area or parts thereof. Depending on the outcome of such monitoring, it may be necessary to carry out alterations to the structure or to consider its removal. In the case of placements taking extended periods of time (years), monitoring should be concurrent with the construction in order to influence modification of the reef, as required.

7. Scientific Experiments

30. Trials involving smaller scale placement for scientific purposes may be required before proceeding with a full scale deployment in order to evaluate the suitability of artificial reef and to assess the accuracy of the predictions of its impact on the local marine environment. As the use of artificial reefs develops, scientific experiments may be carried out. In these cases full justification referred to under section 3 may not be possible or necessary.

8. Management and Liabilities

31. Authorisations for constructing artificial reefs should:

- a. specify the responsibility for carrying out any management measures and monitoring activities required and for publishing reports on the results of any such monitoring;
- b. specify the owner of the artificial reef and the person liable for meeting claims for future damage caused by those structures and the arrangements under which such claims can be pursued against the person liable.

9. Information

32. Any Contracting Party which adopts a regulation, or an individual decision, authorising the creation of one or more artificial reefs should inform the other Contracting Parties, through the medium of the OSPAR Commission, of that action and the reasons which have led to it.