| **Environmental aspect** | **Potential impact** |
| --- | --- |
| **1. Presence*** The presence of people and human-made objects in the Antarctic.
 | * Modification of, or risk to aesthetic, or wilderness significance and intrinsic values.
 |
| **2. Atmospheric emissions*** Discharge of emissions to the atmosphere (including greenhouse gases and particulates) from engines, generators and incinerators, signalling or marking devices.
 | * Pollution of marine, terrestrial, freshwater and atmospheric environments.
 |
| **3. Anchoring*** Interaction with the seafloor or coastal mooring sites from deploying and retrieving anchors and anchor chains.
 | * Disturbance and damage of benthic marine species, communities and habitats.
 |
| **4. Light emission*** Discharge / escape of light from windows and other sources during dark hours.
 | * Injury or death of seabirds striking vessels (see interaction with wildlife).
 |
| **5. Generation of noise*** Sound arising from activities in water, on land or in the air from the operation of vessels, small boats, aircraft, equipment or from individuals or groups of people.
 | * Disturbance to wildlife.
 |
| **6. Release of waste** * Release or loss of any garbage, sewage, chemicals, noxious substances, pollutants, equipment or presence of toxic coatings (e.g. antifouling on hulls).
 | * Pollution of marine, terrestrial and freshwater environments.
* Introduction of pathogens.
* Toxicity and other chronic impacts at the species, habitat and ecosystem level.
 |
| **7. Release of fuel, oil or oily mixtures*** Leak or spill of oil or oily wastes to the environment, including the subsequent movement of such substances.
 | * Pollution of marine, terrestrial and freshwater environments.
* Toxicity and other chronic impacts at the species, habitat and ecosystem level.
 |
| **8. Interaction with water and ice** * Disturbance to the water column, by vessel movement or propulsion.
* Altered wave action.
* Direct breaking of sea ice with a vessel.
 | * Mixing of the water column resulting in sediment disturbance or ecosystem disruptions.
* Coastal erosion from wave action.
* Enhanced breakout of sea ice.
 |
| **9. Interaction with ice-free ground*** Direct or indirect contact with land by foot traffic, vehicles, camp equipment, etc.
 | * Physical changes to the landscape (e.g. erosion, tracks)
* Physical changes to watercourses.
* Alien species introductions.
* Modification in the distribution, abundance or biodiverity of species or populations of species of fauna and flora.
* Altered ecosystem performance.
 |
| **10. Interaction with wildlife*** Direct or indirect contact with, or approach to, wildlife.
 | * Changes to wildlife behaviour, physiology and breeding success.
* Increased risk to endangered or threatened species or populations of such species.
 |
| **11. Interaction with vegetation*** Direct or indirect contact with vegetation or controls on vegetation abundance (e.g. altered water availability).
 | * Physical damage to flora.
* Modification in the distribution, abundance or productivity of species or populations of species of flora.
* Increased risk to endangered or threatened species or populations of such species.
 |
| **12. Interaction with historic sites*** Direct or indirect contact with historic sites, monuments or artefacts and taking of artefacts.
 | * Detrimental changes to the historic values of the areas or items of historic significance.
* Enhanced deterioration of or damage to historic sites and monuments through physical contact.
 |
| **13. Interaction with scientific stations or scientific research*** Direct or indirect contact with science equipment, monitoring or research sites and with station activities.
 | * Degradation of scientific values.
* Interruption of station activity.
* Interruption of, or interference with experimentation.
 |
| **14. Transfer of non native species or propagules** **(via**  **ballast water, vessel hulls, anchors, clothing, footwear, non-sterile soil)*** Unintended introduction to the Antarctic region of species not native to that region, and the movement of species within Antarctica from one biogeographic zone to any other.
 | * Alien species introduced.
* Modification in the distribution, abundance or biodiverity of species or populations of species of fauna and flora.
* Altered ecosystem performance.
* Increased risk to endangered or threatened species or populations of such species.
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<http://www.ats.aq/documents/ATCM35/att/ATCM35_att067_e.doc>