

Appendix 1. CEP Five-Year Work Plan 2018

Issue / Environmental Pressure: Introduction of non-native species	
Priority: 1	
Actions: <ol style="list-style-type: none"> 1. Continue developing practical guidelines & resources for all Antarctic operators. 2. Implement related actions identified in the Climate Change Response Work Programme. 3. Consider the spatially explicit, activity-differentiated risk assessments to mitigate the risks posed by terrestrial non-native species. 4. Develop a surveillance strategy for areas at high risk of non-native species establishment. 5. Give additional attention to the risks posed by intra-Antarctic transfer of propagules. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Initiate work to develop a non-native species response strategy, including appropriate responses to diseases of wildlife • To help the Committee in assessing the effectiveness of the Manual, request a report from COMNAP on the implementation of quarantine and biosecurity measures by its members • United Kingdom to lead discussion with interested Members and Observers, on the further development of a non-mandatory non-native species response protocol
CEP XXII 2019	<ul style="list-style-type: none"> • Discuss the intersessional work concerning the development of a response strategy for inclusion in the Non-native Species Manual, and the implementation of quarantine and biosecurity measures by COMNAP members. Review IMO report on biofouling guidelines • Consider report on intersessional discussion on non-native species response protocol and its inclusion in the Non-native Species Manual • SCAR to present information on existing mechanism to assist with the identification of non-native species
Intersessional period 2019/20	<ul style="list-style-type: none"> • Ask SCAR to compile a list of available biodiversity information sources and databases to help Parties establish which native species are present at Antarctic sites and thereby assist with identifying the scale and scope of current and future introductions • Develop generally applicable monitoring guidelines. More detailed or site-specific monitoring may be required for particular locations • Request a report from Parties and Observers on the application of biosecurity guidelines by their members

CEP XXIII 2020	<ul style="list-style-type: none"> • Discuss the intersessional work concerning the development of monitoring guidelines for inclusion in the NNS Manual. • Consider the reports from Parties and Observers on the application of biosecurity guidelines by their members
Intersessional period 2020/21	<ul style="list-style-type: none"> • Initiate work to assess the risk of marine non-native species introductions
CEP XXIV 2021	<ul style="list-style-type: none"> • Discuss the intersessional work concerning the risks of marine non-native species
Intersessional period 2021/22	<ul style="list-style-type: none"> • Develop specific guidelines to reduce non-native species release with wastewater discharge • Review the progress and contents of the CEP Non-native Species Manual
CEP XXV 2022	<ul style="list-style-type: none"> • CEP to consider if intersessional work is required to review/update the Non-native Species Manual
Intersessional period 2022/23	<ul style="list-style-type: none"> • As appropriate, intersessional work to review the Non-native Species Manual
CEP XXVI 2023	<ul style="list-style-type: none"> • CEP to consider report of ICG, if established, and consider adoption of revised Non-native Species Manual by the ATCM through a resolution

Science knowledge and information needs:

- Identify terrestrial and marine regions and habitats at risk of introduction
- Identify native species at risk of relocation and vectors and pathways for intra-continental transfer
- Synthesise knowledge of Antarctic biodiversity, biogeography and bioregionalisation and undertake baseline studies to establish which native species are present
- Identify pathways for the introduction of marine species (including risks associated with wastewater discharge)
- Assess risks and pathways for introduction of microorganisms that might impact on existing microbial communities
- Monitor for non-native species in the terrestrial and marine environments (including microbial activity near sewage treatment plant discharges)
- Identify techniques to rapidly respond to non-native species introductions
- Identify pathways for introduction of non-native species without any direct human intervention

Issue / Environmental Pressure: Tourism and NGO activities

Priority: 1

Actions:	
<ol style="list-style-type: none"> 1. Provide advice to ATCM as requested. 2. Advance recommendations from ship-borne tourism ATME. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Further develop methodology for site sensitivity assessment and to consider trigger levels (recommendations 3 and 7 of the CEP Tourism Study)
CEP XXII 2019	<ul style="list-style-type: none"> • Discuss the recommendations from the CEP Tourism Study, and other relevant recommendations, and determine priority actions and next steps to be put forward
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	
Science knowledge and information needs:	
<ul style="list-style-type: none"> • Consistent and dedicated monitoring of tourism impacts • Monitor visitor sites covered by Site Guidelines 	

Issue / Environmental Pressure: Climate Change Implications for the Environment	
Priority: 1	
Actions:	
<ol style="list-style-type: none"> 1. Consider implications of climate change for management of Antarctic environment. 2. Implement the Climate Change Response Work Programme. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Subsidiary group conducts work in accordance with agreed work plan
CEP XXII 2019	<ul style="list-style-type: none"> • Standing agenda item

	<ul style="list-style-type: none"> • Consider advice on how WMO activities map to CCRWP • Consider subsidiary group report • SCAR provides update to the Antarctic Climate Change and the Environment (ACCE) report, with input as appropriate from WMO, the Integrating Climate and Ecosystem Dynamics in the Southern Ocean (ICED) programme and SOOS
Intersessional period 2019/20	<ul style="list-style-type: none"> • Subsidiary group conducts work in accordance with agreed work plan
CEP XXIII 2020	<ul style="list-style-type: none"> • Standing agenda item • Consider subsidiary group report • SCAR provides update to ACCE report, with input as appropriate from WMO, ICED and SOOS • Consider review of subsidiary group • Review implementation of actions arising from 2016 joint CEP/SC-CAMLR workshop • Plan for five-yearly joint SC-CAMLR/CEP workshop during 2021/22 intersessional period
Intersessional period 2020/21	
CEP XXIV 2021	<ul style="list-style-type: none"> • Finalise plans for joint SC-CAMLR/CEP workshop during 2021/22 intersessional period
Intersessional period 2021/22	<ul style="list-style-type: none"> • Regular five-yearly joint SC-CAMLR CEP workshop
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	
<p>Science knowledge and information needs:</p> <ul style="list-style-type: none"> • Improve understanding of current and future change to the terrestrial (including aquatic) biotic and abiotic environment due to climate change • Long-term monitoring of change to the terrestrial (including aquatic) biotic and abiotic environment due to climate change • Continue to develop biogeographic tools to provide a sound basis for informing Antarctic area protection and management at regional and continental scales in light of climate change, including identifying the need to set aside reference areas for future research and identifying areas resilient to climate change • Identify and prioritise Antarctic biogeographic regions most vulnerable to climate change • Understand and predict near-shore marine changes and impacts of the change. 	

- Long-term monitoring of change to the near-shore marine biotic and abiotic environment due to climate change
- Assessment on impact of ocean acidification to marine biota and ecosystems
- Understand population status, trends, vulnerability and distribution of key Antarctic species
- Understand habitat status, trends, vulnerability and distribution
- Southern Ocean observations and modelling to understand climate change
- Identify areas that may be resilient to climate change
- Monitor emperor penguin colonies, including using remote sensing and complementary techniques, to identify trends in populations and potential climate change *refugia*

Issue / Environmental Pressure: Processing new and revised protected / managed area management plans	
Priority: 1	
Actions:	
<ol style="list-style-type: none"> 1. Refine the process for reviewing new and revised management plans. 2. Update existing guidelines. 3. Develop guidelines to ASMAs preparation. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • SGMP conducts work as per agreed work plan • Norway and interested Members prepare paper on guidance for delisting ASPAs
CEP XXII 2019	<ul style="list-style-type: none"> • Consider SGMP report • Consider paper by Norway and interested Members on guidance for delisting ASPAs
Intersessional period 2019/20	<ul style="list-style-type: none"> • SGMP conducts work as per agreed work plan
CEP XXIII 2020	<ul style="list-style-type: none"> • Consider SGMP report
Intersessional period 2020/21	<ul style="list-style-type: none"> • SGMP conducts work as per agreed work plan
CEP XXIV 2021	<ul style="list-style-type: none"> • Consider SGMP report
Intersessional period 2021/22	<ul style="list-style-type: none"> • SGMP conducts work as per agreed work plan
CEP XXV 2022	<ul style="list-style-type: none"> • Consider SGMP report
Intersessional period	<ul style="list-style-type: none"> • SGMP conducts work as per agreed work plan

2022/23	
CEP XXVI 2023	<ul style="list-style-type: none"> • Consider SGMP report
Science knowledge and information needs: <ul style="list-style-type: none"> • Monitoring to assess the status of values at ASPA 107 Emperor Island • Use remote sensing techniques to monitor changes in vegetation within ASPAs • Long-term monitoring of biological values in ASPAs 	

Issue / Environmental Pressure: Operation of the CEP and Strategic Planning	
Priority: 1	
Actions: <ol style="list-style-type: none"> 1. Keep the 5five-year work plan up to date based on changing circumstances and ATCM requirements. 2. Identify opportunities for improving the effectiveness of the CEP. 3. Consider long-term objectives for Antarctica (50-100 years time). 4. Consider opportunities for enhancing the working relationship between the CEP and the ATCM. 	
Intersessional period 2018/19	
CEP XXII 2019	
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	

Issue / Environmental Pressure: Repair or Remediation of Environmental Damage	
Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Respond to further request from the ATCM related to repair and remediation, as appropriate. 2. Monitor progress on the establishment of Antarctic-wide inventory of sites of past activity. 3. Consider guidelines for repair and remediation. 4. Members develop practical guidelines and supporting resources for inclusion in the Clean-up Manual. 5. Continue developing bioremediation and repair practices for inclusion in the Clean-up Manual. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Continue ICG to review the Clean-up Manual
CEP XXII 2019	<ul style="list-style-type: none"> • Consider ICG report on review of the Clean-up Manual
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	
Science knowledge and information needs:	
<ul style="list-style-type: none"> • Research to inform the establishment of appropriate environmental quality targets for the repair or remediation of environmental damage in Antarctica • Techniques to prevent mobilisation of contaminants such as melt water diversion and containment barriers • Techniques for <i>in situ</i> and <i>ex situ</i> remediation of sites contaminated by fuel spills or other hazardous substances 	

Issue / Environmental Pressure: Monitoring and state of the environment reporting	
Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Identify key environmental indicators and tools. 2. Establish a process for reporting to the ATCM. 3. SCAR to support information to COMNAP and CEP. 	
Intersessional period 2018/19	
CEP XXII 2019	<ul style="list-style-type: none"> • Consider <i>SCAR's Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica</i>
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	<ul style="list-style-type: none"> • Consider monitoring report by UK on ASPA 107
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	
Science knowledge and information needs:	
<ul style="list-style-type: none"> • Long-term monitoring of change to the terrestrial (including aquatic) biotic and abiotic environment due to climate change • Long-term monitoring of change to the near-shore marine biotic and abiotic environment due to climate change • Monitor bird populations to inform future management actions • Use remote sensing techniques to monitor changes in vegetation within ASPAs and more widely • Monitor emperor penguin colonies, using remote sensing and complementary techniques, to identify potential climate change <i>refugia</i> • Long-term monitoring of biological values in ASPAs • Long-term monitoring to verify or detect environmental impacts associated with human activities 	

- Long-term monitoring and sustained observations of environmental change
- Consistent and dedicated monitoring of tourism impacts
- Systematic and regular monitoring of visitor sites covered by Site Guidelines
- Long-term monitoring of biological indicators at sites visited by tourists

Issue / Environmental Pressure: Marine spatial protection and management	
Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Cooperation between the CEP and SC-CAMLR on common interest issues. 2. Cooperate with CCAMLR on Southern Ocean bioregionalisation and other common interests and agreed principles. 3. Identify and apply processes for spatial marine protection. 4. Consider connectivity between land and ocean, and complementary actions that could be taken by Parties with respect to MPAs. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Informal discussions led by New Zealand on matters relating to Resolution 5 (2017)
CEP XXII 2019	<ul style="list-style-type: none"> • Consider outcomes from informal discussions
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	

Issue / Environmental Pressure: Site specific guidelines for tourist-visited sites

Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Periodically review the list of sites subject to Site Guidelines and consider whether development of guidelines should be need for additional sites. 2. Regular review of all existing Site Guidelines to ensure that they are accurate and up to date, this includes precautionary updates where appropriate. 3. Provide advice to ATCM as required. 4. Review the format of the Site Guidelines. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Development of a Site Guideline review checklist • Development of a repository of pictures to aid in the regular review of Site Guidelines
CEP XXII 2019	<ul style="list-style-type: none"> • Standing agenda item; Parties to report on their reviews of Site Guidelines • Consider a checklist to aid in the conducting of on the ground Site Guideline reviews
Intersessional period 2019/20	
CEP XXIII 2020	<ul style="list-style-type: none"> • Standing agenda item; Parties to report on their reviews of Site Guidelines
Intersessional period 2020/21	
CEP XXIV 2021	<ul style="list-style-type: none"> • Standing agenda item; Parties to report on their reviews of Site Guidelines
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	
Science knowledge and information needs:	
<ul style="list-style-type: none"> • Long-term monitoring to assess the status and recovery of vegetation at Barrientos Island • Systematic and regular monitoring of visitor sites covered by Site Guidelines 	

Issue / Environmental Pressure: Overview of the protected areas system

Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Apply the Environmental Domains Analysis (EDA) and Antarctic Conservation Biogeographic Regions (ACBR) to enhance the protected areas system. 2. Maintain and develop Protected Area database. 3. Assess the extent to which Antarctic IBAs are or should be represented within the series of ASPAs. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Plan for joint SCAR/CEP workshop on further developing the Antarctic protected area system to be held immediately prior to CEP XXII • United Kingdom to lead discussion with interested Members and Observers, on Antarctic Specially Protected Areas and Important Bird Areas
CEP XXII 2019	<ul style="list-style-type: none"> • Consider outcomes from joint SCAR/CEP workshop on further developing the Antarctic protected area system • Provide a report to the ATCM on the status of the Antarctic Protected Areas network • Consider report of intersessional work on Antarctic Specially Protected Areas and Important Bird Areas
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	
Science knowledge and information needs:	
<ul style="list-style-type: none"> • Continue to develop biogeographic tools to provide a sound basis for informing Antarctic area protection and management at regional and continental scales in light of climate change, including identifying the need to set aside reference areas for future research and identifying areas resilient to climate change • Use remote sensing techniques to monitor changes in vegetation within ASPAs and more 	

widely, to inform the further development of the Antarctic protected areas system

Issue / Environmental Pressure: Outreach and education	
Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Review current examples and identify opportunities for greater education and outreach. 2. Encourage Members to exchange information regarding their experiences in this area. 3. Establish a strategy and guidelines for exchanging information between Members on Education and Outreach for long term perspective. 	
Intersessional period 2018/19	
CEP XXII 2019	<ul style="list-style-type: none"> • Bulgaria to draw to the Committee’s attention any outcomes from the ICG on Education and Outreach of direct relevance to the work of the CEP
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	

Issue / Environmental Pressure: Implementing and improving the EIA provisions of Annex I	
Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Refine the process for considering CEEs and advising the ATCM accordingly. 2. Develop guidelines for assessing cumulative impacts. 	

3. Review EIA guidelines and consider wider policy and other issues.	
4. Consider application of strategic environmental assessment in Antarctica.	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Establish ICG to review draft CEEs as required • Members and Observers work to progress and coordinate information that will assist development of guidance on identifying and assessing cumulative impacts • Consider potential changes required to EIA database to improve its utility
CEP XXII 2019	<ul style="list-style-type: none"> • Discuss changes to the EIA database with a view to giving proposals to the Secretariat • Consideration of ICG reports on draft CEE, as required
Intersessional period 2019/20	<ul style="list-style-type: none"> • Establish ICG to review draft CEEs as required • Members and Observers work to progress and coordinate information that will assist development of guidance on identifying and assessing cumulative impacts
CEP XXIII 2020	<ul style="list-style-type: none"> • Consideration of ICG reports on draft CEE, as required
Intersessional period 2020/21	<ul style="list-style-type: none"> • Establish ICG to review draft CEEs as required • Members and Observers work to progress and coordinate information that will assist development of guidance on identifying and assessing cumulative impacts
CEP XXIV 2021	<ul style="list-style-type: none"> • Ask SCAR to provide guidance on how to do an environmental baseline condition survey, and consider their advice in due course • Consideration of ICG reports on draft CEE, as required
Intersessional period 2021/22	<ul style="list-style-type: none"> • Establish ICG to review draft CEEs as required • Members and Observers work to progress and coordinate information that will assist development of guidance on identifying and assessing cumulative impacts
CEP XXV 2022	<ul style="list-style-type: none"> • Encourage parties to provide feedback on the utility of the revised set of <i>Guidelines for Environmental Impact Assessment in Antarctica</i> in the preparation of EIAs • Consideration of the options for preparing guidance on identifying and assessing cumulative impacts • Consideration of ICG reports on draft CEE, as required
Intersessional period 2022/23	<ul style="list-style-type: none"> • Establish ICG to review draft CEEs as required
CEP XXVI 2023	<ul style="list-style-type: none"> • Consideration of ICG reports on draft CEE, as required

Issue / Environmental Pressure: Designation and management of Historic Sites and Monuments	
Priority: 2	
Actions:	
<ol style="list-style-type: none"> 1. Maintain the list and consider new proposals as they arise. 2. Consider strategic issues as necessary, including issues relating to designation of HSM versus clean-up provisions of the Protocol. 3. Review the presentation of the HSM list with the aim to improve information availability. 	
Intersessional period 2018/19	<ul style="list-style-type: none"> • Argentina and the United States to lead work to examine the format of the list of Historic Sites and Monuments
CEP XXII 2019	<ul style="list-style-type: none"> • Review a proposed new format for the list of Historic Sites and Monuments
Intersessional period 2019/20	<ul style="list-style-type: none"> • Work to consider how the CEP can better bring conservation management plans into its wider tools to protect Antarctic heritage
CEP XXIII 2020	<ul style="list-style-type: none"> • Review proposals relating to how conservation management plans can contribute to the management of HSMs
Intersessional period 2020/21	<ul style="list-style-type: none"> • Consider how environmental impact assessments can form a part of Historic Site and Monument assessment
CEP XXIV 2021	<ul style="list-style-type: none"> • Review proposals relating to EIAs and the HSM listing process
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	

Issue / Environmental Pressure: Biodiversity knowledge	
Priority: 3	
Actions:	
<ol style="list-style-type: none"> 1. Maintain awareness of threats to existing biodiversity. 2. CEP to consider further scientific advice on wildlife disturbance. 	
Intersessional period 2018/19	

CEP XXII 2019	<ul style="list-style-type: none"> • Discussion of SCAR update on underwater noise
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	
<p>Science knowledge and information needs:</p> <ul style="list-style-type: none"> • Research on the environmental impacts of remotely piloted aircraft systems (RPAS), particularly on wildlife responses including: <ul style="list-style-type: none"> ○ a range of species including flying seabirds and seals; ○ both behavioural and physiological responses; ○ demographic effects, including breeding numbers and breeding success; ○ ambient environmental conditions, for example, wind and noise; ○ the effects of RPAS of different sizes and specifications; ○ the contribution of RPAS noise to wildlife disturbance; ○ comparisons with control sites and human disturbance; and ○ habituation effects. • Collection and submission of further spatially explicit biodiversity data • Research on the impacts of underwater noise on Antarctic marine mammals • Synthesis of available knowledge on the biogeography, bioregionalisation and endemism within Antarctica • Site-specific, timing-specific and species-specific studies to understand the impacts arising from interactions between human activities and wildlife and support evidence-based guidelines to avoid disturbance • Inventory of Mt Erebus ice caves and microbial communities • Regular population counts and research to understand the status and trends in the southern giant petrel population 	

Issue / Environmental Pressure: Protection of outstanding geological values	
Priority: 3	
Actions:	
1. Consider further mechanisms for protection of outstanding geological values.	
Intersessional period 2018/19	
CEP XXII 2019	<ul style="list-style-type: none"> • Consider advice from SCAR
Intersessional period 2019/20	
CEP XXIII 2020	
Intersessional period 2020/21	
CEP XXIV 2021	
Intersessional period 2021/22	
CEP XXV 2022	
Intersessional period 2022/23	
CEP XXVI 2023	