BIODIVERSITY ACTION PLAN FOR SOUTH GEORGIA & THE SOUTH SANDWICH ISLANDS 2016-2020

REVIEW OF PROGRESS

Background

The first National Biodiversity Action Plan for South Georgia & the South Sandwich Islands was launched in 2016 with the overall aim of ensuring that species and habitats receive adequate protection and that all current and future activities in the Territory are managed sustainably and with the interests of protecting the environment at their heart. The overarching objectives for the plan were identified in the South Georgia & the South Sandwich Islands Strategy 2016-2020.

This review will provide an overview of the progress made against each of these objectives with the aim of informing the NBAP for the next 5-years. A bibliography of key supporting documents is provided in Annex 1.

Objective 1: Integrate principles of environmental sustainability into Government policies and ensure that environmental management practices are fully transparent and conform to, or exceed, global standards

1.1 Ensure that all future legislation and policies that relate to economic and infrastructure developments do not have significant negative impact on biodiversity.

1.1.1 Planned infrastructure maintenance work at King Edward Point and Bird Island will be subject to an annual environmental assessment.

⇒ Prior to annual maintenance work at KEP an environmental assessment is submitted which identifies potential impacts and mitigation measures, and where a permit is required under the Wildlife and Protected Areas Ordinance. A Regulated Activity Permit (RAP) is issued.

⇒ At Bird Island project specific RAP's are issued each season for maintenance tasks.

1.1.2 Any opening of new visitor landing sites or changes in use of existing visitor landing sites will be proceeded by an environmental assessment

⇒ No new visitor landing sites or changes in use of visitor landing sites have occurred in the reporting period

1.1.3 Any science or media activity that requires installation of equipment on land or at sea, or that will require an overnight stay ashore anywhere other than at a research station will be preceded by an environmental assessment.

⇒ All activities other than tourism require a RAP. The RAP application forms include an environmental assessment which is commensurate with the level of risk posed by the project

⇒ Between 2016 and 2020, 272 RAPs have been processed

1.1.4 Any development which has a major impact on the existing footprint of operations in the Territory will be preceded by an externally reviewed environmental assessment.

⇒ In the reporting period there have been two projects which had the potential to have a major impact on the footprint of operations, both in relation to the infrastructure upgrade in advance of the new polar research vessel the Sir David Attenborough. These were 1) the re-development of Bird Island research station 2) the re-development of the KEP wharf. These projects submitted comprehensive environmental impact assessments which were externally reviewed prior to a RAP being issued.

1.1.5 The policy of not permitting activities such as mineral and hydrocarbon extraction will be continued

⇒ The practice of not giving permission for commercial mineral or hydrocarbon extraction continues and has been re-affirmed

⇒ Consideration has been given to how to best incorporate this into formal policies and legislation and this work is ongoing

1.2 The mechanisms and impacts of climate change will be factored into the decision-making process and, where possible, action will be taken to reduce the carbon footprint of GSGSSI operations.

1.2.1 Where possible, power in the Territory will be from renewable sources. At King Edward Point, hydroelectric power will be maintained as the main source of power and diesel generators will only be used as a reserve power source.

- ⇒ Renewable energy continues to be the main source of Power at King Edward Point and Grytviken. Approximately 80% of power needs are supplied by the hydroelectric power system
- ⇒ Reports have been commissioned that indicate that this can be increase by a further 12KW by the installation of a microturbine at another site .

1.2.2 Economical, fuel-efficient travel will be a requirement for the fisheries patrol vessel *Pharos SG* during routine transit.

- ⇒ This continues to be the case. Standing orders are in place to maintain best fuel economy for speed
- ⇒ Regular maintenance and modifications of engines are undertaken in order to maximise efficiency

1.2.3 Waste management for all elements of operations at King Edward Point and Bird Island will be reviewed in collaboration with BAS. Waste streams will be mapped, options for reduction of waste identified, and handling and disposal options reviewed to ensure they reflect best practice.

- ⇒ All waste generated on South Georgia, with the exception of that derived from asbestos, is processed through the BAS and returned to the UK for proper disposal
- ⇒ A detailed waste mapping procedure has not been undertaken but this is a priority for post 2020 in light of Brexit and changes to the Basel convention

1.2.4 The environmental footprint of GSGSSI operations in Stanley will be reviewed, and an energy policy will be developed.

- ⇒ GSGSSI has taken steps to reduce single use plastic in its operations at Government House in collaboration with FCDO
- ⇒ In the GSGSSI strategic vision, we have committed to be single use plastic free by 2025
- ⇒ A detailed energy policy has not been developed and remains outstanding

Objective 1: overall progress and recommendations

- ⇒ As reaffirmed in the 2021-2025 vision, sustainable environmental management is at the very heart of all Government operations. As all actions potentially have an impact this crosscutting objective has broad reach. Whilst there is still work to be done on some specific objectives, such as waste management and energy policy, overall since the inception of the NBAP the GSGSSI commitment to environmental sustainability has increased and this objective has been met.
- ⇒ Whilst it is useful to identify specific work areas, opportunities to develop environmental management practices in other areas should not be missed. Broader, more adaptable plans may aid this.
- ⇒ Given the close working relationship with the Falkland Islands, engaging and supporting sustainability in the Falkland Islands, will have positive benefits for South Georgia

Objective 2: Increase SGSSI's environmental global reach though collaboration and knowledge sharing with our stakeholders

2.1 Maintain a close, working relationship on biodiversity and conservation related issues with relevant UK government departments, governments of other sub-Antarctic territories and non-governmental organisations.

2.1.2 Regular dialogue with the UK government departments and governments of other sub-Antarctic Territories will be maintained to discuss progress and delivery of environmental management objectives.

- ⇒ Regular meetings take place at a high level to discuss synergies between the Governments and actions are passed down to appropriate departments. Examples include feasibility discussions for a Falkland Island based SGSSI biosecurity facility, sharing use of the GSGSSI Biosecurity Dog Programme, and resources to understand and mitigate marine non-native species.
- ⇒ A monthly meeting is held with FCDO Polar Regions department to discuss permitting matters which may have a bearing on environmental management.

⇒ There are regular informal exchanges of knowledge and best practice with other Overseas Territory governments on biosecurity, either directly or with assistance of the GB non-native species secretariat.

2.1.2 An annual stakeholder meeting will be held to provide an opportunity for wider consultation and to ensure transparency in major GSGSSI policy decisions.

⇒ Annual stake-holder meetings have been held.
  - In 2019 this included a special science section which included contributions from a wide range of disciplines on how science may help inform environmental management of the Territory
  - In 2020, due to the covid pandemic, the stakeholder meeting was held virtually which allowed attendance of people throughout the world without the need for travel

⇒ Presentations from stake-holder meetings are available online via the GSGSSI website

2.1.3 The opportunity to form special interest groups will be provided if an issue which warrants further discussion is identified in the annual stakeholder meeting.

⇒ This has not been required in the reporting period

2.2 Raise awareness of the global importance of SGSSI biodiversity amongst the international community with a particular emphasis on those based in the UK, European Union and Falkland Islands.

2.2.1 An outreach plan will be produced which will identify opportunities to engage target audiences on environmental and conservation issues through a variety of media.

⇒ Rather than develop an overarching outreach plan, project specific plans have been developed for key initiatives such as the launch of the new visitor briefing film and launch of the strategic vision

⇒ At the end of the reporting period, the GSGSSI Twitter account had 3800+ followers and the GSGSSI Facebook page has been developed which currently has 1400+ followers

2.2.2 Media projects which promote SGSSI biodiversity to target audiences will be encouraged. Where appropriate, assistance will be given in planning and implementing such projects

⇒ A number of successful wildlife documentaries have been supported by GSGSSI to film in the territory including BBC Seven Worlds, BBC Blue Planet 2 and Spy in the Wild

⇒ In total 38 media projects were permitted between 2016 and 2020

2.2.3 The environment and wildlife pages on the GSGSSI website will be expanded and kept updated.

⇒ The webpages are updated regularly

2.2.4 GSGSSI staff, and those working on environmental and conservation projects on the islands, will be encouraged to attend local and international meetings which provide opportunities to share their work and raise awareness of SGSSI biodiversity with a wider audience

⇒ Meetings GSGSSI have participated in include: UKHO seminar, IAATO AGM, Horizon scanning exercise by CEH, presentations about biosecurity dog programme online (public), presentation to UKOTCF; Blue Belt symposium, SAERI natural capital conference

Objective 2: overall progress and recommendations

⇒ Since the inception of the 2016-2020 NBAP the profile of SGSSI and a leader in data-led environmental management has increased. Therefore, broadly this objective has been achieved although there are still areas for further development

⇒ Stakeholder meetings should continue to be made available for online participation even after covid travel restrictions have been lifted

⇒ Review of webpages should be scheduled as an annual activity rather than being done on an *ad hoc* basis

⇒ Dedicated media help packs should be developed to aid prospective film crews in the planning process and provide relevant background information to the permitting process and conservation work ongoing in the Territory.

Objective 3: Ensure that our obligations under multilateral environmental agreements are met

3.1 Convention on the Conservation of Marine Living Resources

3.1.1. Manage SGSSI fisheries in a precautionary manner, to the highest international standards and consistent with all CCAMLR requirements, to ensure long-term sustainability.

⇒ Conservation measures for all fisheries in SGSSI have agreed by CCAMLR. Consistent with our precautionary principal, GSGSSI set more precautionary Total Allowable Catch (TAC) than CCAMLR

3.1.2. Support the UK delegation to CCAMLR to represent SGSSI's interests and promote the highest standards of marine management and conservation in the South Scotia Sea and wider Southern Ocean, by means including continued MSC certification and fisheries management plans.

⇒ GSGSSI staff are actively involved in the UK delegation to CCAMLR including Scientific Committee

⇒ During the reporting period, the Patagonian toothfish fishery had been recertified by Marine Stewardship Council with increased score

3.1.3. Continue to rigorously implement and further enhance mitigation measures to avoid the incidental mortality of seabirds, including working ACAP to prompt action in other jurisdictions visited by South Georgia seabird populations.

⇒ Seabird bycatch mitigation measures including the use of streamer lines, bird exclusion devises, and night setting, have been continued in SGSSI fisheries and are effective at reducing bird by-catch

⇒ To minimise overlap with white-chin petrel migration, the start date of the toothfish fishery has been delayed by 2 weeks

3.2 Convention on Migratory Species

3.2.1. Provide the UK with all information necessary to compile its national report to the Convention on Migratory Species.

⇒ Information provided to the UK in a timely fashion as requested via DEFRA

3.2.2. Review the plan for the implementation of the Agreement in the Conservation of Albatross and Petrels (ACAP) on South Georgia on a regular (5-year) basis.

⇒ The ACAP implementation plan was last reviewed and updated in 2016 and will require further review and update at the end of 2021

⇒ GSGSSI contributes to the funding for a Falkland's based ACAP co-ordinator which ensures that cross-territory collaboration in the implementation of the plan is maximised

3.2.3. Undertake actions described in the ACAP implementation plan and report as required to the ACAP secretariat.

⇒ Reporting is undertaken by the ACAP co-ordinator. GSGSSI liaise regularly and provide the required information for reporting to the ACAP secretariat in a timely fashion

3.2.4. In light of on-going population declines, develop species action plans for black-browed, grey-headed and wandering albatross.

⇒ Following the archipelago wide census of albatross undertaken in 2015 showing declines in all species, ACAP listed the South Georgia populations of wandering, grey-headed and black browed albatross as priority populations.

⇒ The South Georgia Albatross Conservation Action Plans were developed with key stake holders including the UK Government, the British Antarctic Survey (BAS) and the Royal Society for the Protection of Birds (RSPB), and all these organisations are committed to supporting the delivery of the plan

⇒ The albatross action plans were published in early 2017. Progress is reviewed regularly through ACAP but GSGSSI will undertake a comprehensive review of progress in 2021

3.2.5. Strive to better understand the population dynamics of cetacean populations in the Territory by developing monitoring programmes and photo-identification catalogues and ensuring these data are available to concerned nations and scientists.

⇒ Significant advances have been made in the understanding of cetacean population dynamics around South Georgia with the main research being led by the British Antarctic Survey.

⇒ A range of methodologies have been employed including genetic sampling, photographic ID and satellite tracking on order to better understand whale populations. Evidence suggests that whale populations on South Georgia are increasing.

⇒ The data are available through NERC and are input into the IWC via the lead researcher.

3.3 Convention on Biological Diversity

3.3.1. Provide the UK with all information necessary to compile its national report to the Convention on Biological Diversity.

⇒ Information provided to the UK in a timely fashion as requested via DEFRA

3.3.2. As far as practical, support the UK in achieving Aichi targets through implementation of this Biodiversity Action Plan (see Annex 2).

⇒ Overall positive contribution to Aichi targets achieved. See final conclusion and recommendations.

3.3.3. Work towards ensuring that GSGSSI policy, procedures and legal framework are consistent with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.

⇒ GSGSSI is not, and does not intend to become a signatory to the Nagoya Protocol however, steps have been taken to make our position on access to genetic material and alignment with current legislation clearer.

- Any samples of biological materials require permission under the Wildlife and Protected Areas Ordinance. Under section 21 of the Ordinance permission can only be granted under certain circumstances including scientific research, education, conservation, public health and safety, preventing spread of disease
- Prior to issuing permission to collect samples, GSGSSI require applicants to complete an environmental impact assessment and demonstrate that the work will not be harmful to the environment

- When samples have been collected, permit holders must notify GSGSSI when they have been removed from the territory. The level of information on export is variable and depends on how refined the sample is e.g. ID may be of a specific part of a specific species e.g. fur seal tooth, or a general habitat sample which could contain many species e.g. soil core, sediment etc.
- After samples have left the Territory GSGSSI claim no rights over the material and do not control its further distribution or analysis. Permit holders are encouraged to send GSGSSI copies of any publications or research that result from their work in the Territory.
- From 2019 GSGSSI developed a privacy policy which gives it permission to pass personal details of RAP applicants to third parties of activities which have taken place in order to aid collaboration or collate data on research/media activities. We were not explicit if this would include details of sample collection undertaken or just an overview of the work. Not all projects agreed to this and requested they be contacted prior to their details being passed to a third part

3.3.4. Remain vigilant to conservation threats and develop species action plans as appropriate.

⇒ To date no additional species-specific action plans have been required. We remain vigilant to threats and stand ready to reassess.

Objective 3 – Overall progress and recommendations

⇒ With the support of FCDO and DEFRA we have met all our commitments to the MEAs to which we are applicable to the territory and in some cases have exceeded requirements and taken a leadership role

⇒ Careful thought is needed before making further commitments to MEAs and benefit to the Territory should be carefully weighed against the resources needed to effectively implement the agreement

Objective 4. Develop standardised environmental assessment procedures which are scalable and commensurate with the potential impact the activity may have on the environment.

4.1. Review current practices and ensure environmental assessment procedures and mitigation measures are fit for purpose

4.1.1. Review existing environmental assessment procedures in place for use in SGSSI (including those used by BAS and GSGSSI) and liaise with other bodies such as DEFRA to determine best practice.

⇒ An informal review of environmental assessment procedures used elsewhere was undertaken when developing the new GSGSSI system. Elements appropriate to the territory, such as scaled risk assessments, were adopted and incorporated into a SGSSI specific approach.

4.1.2. Create a revised environmental impact assessment procedure with standard on-line documentation to assist applicants.

⇒ Environmental assessment procedures are now fully integrated into the Regulated Activity Permit system. There are three categories of RAP application depending on the complexity the project. This ensures that environmental assessments are scalable and commensurate with the potential impacts of activities.

⇒ A standardised application format is available for category 1 and 2 applications and a bespoke approach is adopted for category 3 applications. These are typically complex projects, or where it is deemed the environmental risk is higher, a more bespoke approach is adopted. The content of this customised environmental assessment will depend on the scope of the project and whether the risk is related to a single element or will affect the environment more generally

⇒ An online format was trailed in 2020 but further work is needed to develop this.

⇒ Work is ongoing to ensure that environmental assessments for expeditions are aligned more closely with those for other activities

4.1.3. Work with appropriate independent experts to review any development which has a major impact on the existing footprint of operations, and/or that have a potential to have a major impact on the environment, to ensure best practice standards are upheld.

⇒ See 1.1.4

⇒ The EIAs for both of these projects were reviewed by a panel of independent experts. Best practice standards were upheld and, in some cases, exceeded. In particular

development of animal movement guidelines for construction work has improved animal welfare and accountability and BAS now have plans to apply this to all stations.

4.1.4. Consider if any additional legislation is required in order to support revised environmental assessment procedures.

⇒ No additional legislation requirements were been identified in the reporting period.

Objective 4 – overall summary and recommendations

⇒ Robust environmental assessment procedures are now in place which are aligned with best practice elsewhere. The tiered system allows GSGSSI to focus on activities which potentially have the most impact.

⇒ More work is needed to develop the online format and integrate this into other permitted activities such as tourism.

⇒ Environmental assessment procedures will require ongoing revision and refinement in order to be continue to be fit for purpose and ensure emerging threats are accounted for

Objective 5: Enhance knowledge of the biodiversity and habitats of SGSSI through research, monitoring and review, including the establishment of scientific baselines from which to assess environmental change, including the potential effects of climate change.

5.1 Improve understanding of the flora and fauna of the Territory

5.1.1 Improve taxonomic understanding and work with experts to develop identification guides for understudied taxa such as invertebrates.

⇒ Limited progress on this objective. Work with CABI on ID of non-native species. Improved capacity of identification of plants though weed management project.

5.1.2 Identification and investigation of species in both marine and terrestrial habitats that can be used as a barometer for change in respect of management interventions.

⇒ In the terrestrial realm, as part of the non-native plant management programme, monitoring to assess the impact of herbicide use on target and non-target species have been established.

⇒ Knowledge of the both the marine and pelagic marine habitats surrounding South Sandwich Islands has been increased as a result of research cruises on RRS Discovery. This is a base line against which further change can be measured.

⇒ Krill is primary barometer of change in marine environment. During 2019 the South Sandwich Islands were a key component of the international synoptic survey for krill. Monitoring of krill dependant predators at Miaviken and Bird Island continues

5.1.3 Utilisation of new technologies and remote sensing techniques that maximise understanding of the Territory's flora and fauna with minimal impact on the environment.

⇒ Successful use of UAVs and satellite imagery during in a coastal mapping project that assessed terrestrial and near shore habitats across South Georgia

⇒ Increasing use of UAV for survey and census of penguins, albatross and seals. This is now established in the KEP science plan.

5.1.4 Encourage scientists who can improve knowledge of less well-studied taxa to visit the Territory and ensure that this information legacy remains accessible.

⇒ Applications have been supported where they have been forthcoming.
  - Upcoming work looking at seaweed biodiversity.
  - PhD on fungal biodiversity project led by the South Atlantic Environmental Research Institute and University of Aberdeen was supported by GSGSSI and fieldwork undertaken in 2016. Results awaiting publication

5.1.5 Improve baseline data on benthic habitats (including those in benthic closed areas) and intertidal zones to underpin management of protected areas.

⇒ Knowledge of benthic habitats has been improved as a result of a benthic camera survey in 2018/19 and the deployment of cameras on the lines of long-line fishing vessels

⇒ Surveys by RRS Discovery, helped to expand knowledge of the benthos of the South Sandwich Islands

5.1.6 Produce a guide to the marine life of SGSSI

⇒ Work is ongoing but this has yet to be completed

5.2 Monitor the recovery of habitats and biodiversity following restoration projects and management interventions

5.2.1 Development of long term monitoring sites to track the recovery of bird species, and particularly burrowing seabird populations following the eradication of rats, mice and reindeer.

⇒ Long term monitoring sites are established on the Thatcher, Busen and Barff peninsulas. Species targeted are: white-chinned petrels, diving petrels and prions

⇒ These are surveyed every 2-4 years and were last surveyed in 2018

5.2.2 Development of long-term monitoring sites to monitor the changes in coastal vegetation communities following the eradication of reindeer.

⇒ Long term monitoring sites are established on the Thatcher, Busen and Barff peninsulas. Habitats surveyed include tussock, wet grassland, dry grassland and fellfield/scree

⇒ These are surveyed every 2-4 years and were last surveyed in 2018

5.2.3 Use of remote sensing technology to map vegetation communities and coastal marine habitats on a landscape scale for future use as a baseline against which large scale change in response to eradication efforts and climate change can be measured.

⇒ See 5.1.3

5.2.4 Develop monitoring protocols to facilitate the documentation of changes in vegetation community composition as a consequence of herbicide application and non-native plant control.

⇒ Development of monitoring plots was included in the weed management contract granted to Indigena biosecurity. Monitoring consists of photo points as well as eleven 10x10 m plots to monitor vegetation changes following herbicide control of class 2 species and a further eight plots to monitor vegetation changes following herbicide control of class 1 species.

⇒ Results of the monitoring are expected to be detailed in the end of contract report due in mid-2021 and will inform the next weed management strategy.

Objective 5 – overall summary and recommendations

- ⇒ Mixed progress in achieving the activities under this objective. Generally, areas where tasks are outstanding are associated with increased knowledge of poorly studied taxa. This may be symptomatic of a global shortage of expertise in these areas.
- ⇒ Monitoring which has been developed over the last 5-years should be continued as it may take many years to see significant change on a community level.
- ⇒ Activities have been most successful where the work relates directly to a management objective. For future planning, it may be beneficial to be more targeted in outlining which taxa should be targeted and have these more explicitly linked to management.

Objective 6: Effectively manage non-native species and work along the entire biosecurity continuum to deliver best practice biosecurity protocols, post-border monitoring and emergency response measures

6.1 Ensure that biosecurity protocols are reviewed and, where possible, improved particularly in respect of rats and mice

6.1.1 Consolidate existing biosecurity policies and protocols into a biosecurity handbook that is available online.

- ⇒ The first iteration of the biosecurity handbook was completed in 2016 and following stakeholder review/consultation was published on the GSGSSI website. This is now the single go-to reference for all biosecurity information for those visiting or providing logistic support to those operating in the territory

6.1.2 Conduct an annual biosecurity review which covers all elements of the logistic activities on SGSSI. Complete action points raised in a timely manner and update the biosecurity handbook as necessary.

- ⇒ An annual biosecurity review is undertaken in June each year with involvement from the South Georgia based Government Officers and the team in Stanley. The key findings of this are summarised and published on the GSGSSI website.

6.1.3 Review protocols for all vessels visiting the Territory to ensure consistency of biosecurity standards, particularly with regard to rats and mice.

⇒ Using data collected by the biosecurity dog team to identify 'high risk' areas on vessels, rodent monitoring protocols have been revised and are applied to all vessels. The dog team and their pre-border rodent searches of vessels and cargo add greater confidence that vessels are rodent free.

6.1.4 Review and improve cargo handling procedures and facilities to further reduce the risk of rodents and other non-native species being transported into the Territory.

⇒ In addition to searching vessels and cargo the biosecurity dog team check ports, jetties, warehouses and packing areas. Their findings inform mitigation such as rodent management measures being deployed at jetties.

⇒ GSGSSI have developed a standardised cargo handling and packing protocol with UK exporters, primarily SATLAN and more recently BAS to ensure high standards of pre-border biosecurity are applied.

⇒ GSGSSI worked with BAS and WD4C to develop UK-based rodent detector dog capabilities. This was implemented for the KEP wharf development project, and will become standard practice for BAS to use rodent dogs on South Georgia bound cargo.

6.1.5 Work with the Falkland Island Government to investigate the feasibility of the use of a rodent detection dog based in the Falkland Islands for pre-border biosecurity screening on vessels.

⇒ Following a feasibility study the rodent detector dog programme is now fully established with a full-time dog handler and trained dog based in the Falkland Islands

⇒ The dog programme is also used by FIG to search FI rodent-free islands and inter-island cargo.

6.1.6 Install additional rodent monitoring devices at visitor landing sites and jetties at King Edward Point and Grytviken as necessary.

⇒ Requirement for rodent monitoring devices is reviewed at the annual biosecurity review. 'Rodent hotels' and additional bait stations are deployed as required on a seasonal basis based on operational risk assessments

6.1.7 Ensure all visitors are briefed on and act in accordance with biosecurity procedures by providing the necessary information, equipment and other means they need to avoid introducing non-natives species or transmitting diseases.

⇒ A new briefing film and materials have been developed to enhance briefings, and a framework is in place to ensure that everybody is adequately briefed and understands their biosecurity obligations before going ashore.

⇒ *MV Pharos SG* has been equipped with a biosecurity kit to facilitate passengers and crew in biosecuring their clothing and equipment.

6.1.8 Make all visitors aware of what actions that should be taken if they witness or suspect that a biosecurity breach or rodent incursion has occurred.

⇒ Details of what steps should be taken on sighting a rodent or sign of rodents are outlined in the biosecurity handbook. All expedition staff have a copy of this and are briefed to convey this to their guests

6.1.9 Solicit independent expert review of biosecurity protocols every 5-years to ensure that best practice is being maintained.

⇒ A biosecurity review was undertaken by the GB non-native species secretariat in 2018. This was overall positive and where appropriate measures for improvement have been identified and adopted.

⇒ In addition, GSGSSI has taken the decision to undertake a continuous review process and regularly engage with independent experts to ensure biosecurity practices remain fit for purpose. This ensures we are able to respond to biosecurity threats as they immerge and better protect South Georgia biodiversity.

6.2 Strengthen ties and share knowledge on best biosecurity practice with gateway ports so as to best protect the biodiversity of the Territory

6.2.1 Work with the Falkland Island Government and HM armed forces to improve biosecurity arrangements at gateway ports. As appropriate provide them and with DOC200 traps to reduce abundance of rodents at port facilities.

⇒ Strong relationships have been formed with FIG biosecurity, especially though the rodent detector dog programme. DOC200 traps have been provided and deployed around the FIPASS area

⇒ DOC200 traps have been provided to HM armed forces and have been deployed around East Cove Mare Harbour. However, the regular turnover of staff mean that these traps are not always regularly maintained. The rodent detector dog does visit RN vessels prior to deployment to South Georgia

6.2.2 Participate in local and regional workshops that relate to biosecurity.

⇒ As part of the GBNNSS project to improve biosecurity in the OT's, CEH delivered a horizon scanning workshop. GSGSSI attended and inputted into the process and have prioritised risk mitigation of marine INNS as a result.

6.2.3 Maintain regular contact with the Falkland Islands Government Department of Agriculture to share knowledge on emerging threats and possible mitigation measures.

⇒ The two governments share information and resources, tracking local outbreaks of wildlife diseases such that appropriate mitigation can be implemented if necessary.

6.3 Develop a non-native plant management strategy, identifying which, if any, species could be eradicated and which should be controlled

6.3.1 Complete non-native plant surveys of coastal regions of the Territory, giving priority to areas which have a history of sustained human presence i.e. King Edward Point, the former whaling stations at Grytviken, Stromness, Leith, Husvik, Prince Olav Harbour; parts of the Barff and Green peninsulas and Moltke Harbour.

⇒ As part of a Darwin funded project, non-native plant surveys were completed in 2016 and formed the basis for the non-native plant management strategy

⇒ Surveys are ongoing and extend to sites beyond the original priority areas as logistic support allows.

⇒ A citizen science awareness project provides a mechanism for visitors to alert GSGSSI of non-native plants that are found beyond their known range

6.3.2 Identify key performance indicators and publish a non-native plant management strategy and associated environmental assessment on the GSGSSI website and distribute to interested stakeholders.

⇒ In March 2016 the non-native plant management strategy was launched with a funding commitment of a minimum of £250,000 over the 5-year life span

⇒ Eight key performance indicators were identified which covered herbicide control, mapping and research. These formed the basis for the awarding of the contract to provide expert contractors to carry out the work

6.3.3 Undertake a programme of herbicide control for species which have been identified as a priority for control in the non-native plant management strategy, publishing an annual update on progress.

⇒ Herbicide control has been undertaken annually from approximately December to March each year.

⇒ Key performance targets have been met and as per the contract, annual updates have been provided and made available via the GSGSSI

6.3.4 Develop an early detection, rapid response strategy which can be implemented to prevent further spread should a new species be detected.

⇒ Ongoing surveys and formalised procedure for identification and classification of newly discovered species has contributed significantly to achieving this goal.

⇒ It is expected that a detailed strategy will be published in the next iteration of the non-native plan management plan

6.3.5 Ensure that the database which contains information about the non-native plant control efforts on South Georgia is available online.

⇒ The database is available online and is hosted by the British Antarctic survey. It is accessible at http://apex.nerc-bas.ac.uk/f?p=153:1:0:::::

6.3.6 Build capacity to ensure that a group of trained and appropriately experienced workers with the appropriate skill base is available to the project in the future.

⇒ Existing capacity of Falklands based staff has been further developed and a newly recruited member of staff from the Falkland Islands has been deployed on two occasions

⇒ Additional work is needed to build interest in weed management withing the Falkland Islands and expand the pool of experienced people to engage in the project

6.4 Risk assessment and monitoring for non-native species in the marine environment

6.4.1 Identify project partners who can assist in undertaking a risk assessment of the potential for marine non-native species introduction on South Georgia.

⇒ Several funding applications have been submitted in collaboration with the South Atlantic Environmental Research Institute to undertake this risk assessment. In addition to a basic risk assessment the applications sought to gather baseline data on marine biodiversity and sequence known invasive. Unfortunately, none of these funding applications were successful.

⇒ A focused project involving a pathway analysis, risk assessment and review of best practice will be funded directly by GSGSSI and is due to commence in 2021.

6.4.2 Review existing information on native and non-native marine species in South Georgia and at gateway ports including the potential impact of non-native species.

⇒ See 6.4.1

6.4.3 Undertake a pathway analysis to better understand how non-native marine species may enter and move around within the Territory

⇒ See 6.4.1

6.4.4 Work with experts and stakeholders to identify practical, effective mitigation measures and, as appropriate, put them in to effect.

⇒ See 6.4.1

6.5 Improve understanding of the extent of non-native invertebrate species and prevent further spread

6.5.1 Identify project partners with suitable taxonomic expertise on invertebrate fauna. Work together to conduct field surveys at sites around SGSSI.

⇒ Samples have been collected during the 2015 island wide wandering albatross survey but resources were not available to analyse them at the time

⇒ New project partners have been identified and a joint Darwin bid with the British Antarctic survey and Durham University has been submitted

6.5.2 Produce a map showing distributions of non-native invertebrate species. Identify un-invaded sites that would benefit from additional protection.

⇒ Not achieved. See 6.5.1

Objective 6 – overall summary and recommendations

⇒ Excellent progress in this area with most activities being achieved and surpassed.

⇒ Particularly strong progress in the detector dog programme which has served not improve biosecurity for South Georgia but also develop links with the Falkland Island Government as identified in objective 2

⇒ A dedicated biosecurity and visitor management officer within GSGSSI has increased capacity in this area significantly

⇒ Work still remains on marine invasives which is expected to be a high priority in the next biodiversity action plan

Objective 7: Adopting an evidence-based approach and using the best available data, ensure appropriate protection of the terrestrial and marine environments through a suite of protected areas, ensuring that activities are managed sustainably and with minimal impacts on the environment

7.1 Adopt a collaborative, precautionary approach to visitor management, working with user groups to establish a monitoring programme. Use this information to develop revised visitor management plans

7.1.1 Establish baseline information on how visitors use terrestrial areas on South Georgia by gathering data on the current spatial extent of operations, including visitors engaged in tourism activities, expeditions and personnel based at King Edward Point who are undertaking recreational travel.

- ⇒ In early 2016 all expedition leaders who visited South Georgia were invited to take part in a visitor site use survey where they were requested to mark down the extent of the area they use at each site along with any particular attractions, hazards or seasonal variation. Only 9 operators responded to the survey but a response was received for each site giving valuable, if not comprehensive insight into current visitor use patterns
- ⇒ Detailed information on the past and present use of inland areas by expeditions was provided by the expedition panel
- ⇒ Uptake from other groups such as KEP residents was very limited with just one or two responses. Further engagement with this group, or with a nominated representative would be beneficial.

7.1.2 Establish monitoring sites at locations that receive different levels of visitation and visitors engaged in different types of activity in order to collect data needed to inform revised management plans.

- ⇒ Data on visitor sites has primarily been in the form of aerial surveys via UAV.
- ⇒ More detailed site-specific monitoring is planned but has not been instigated

7.1.3 In consultation with IAATO and other stake-holders, develop management policy and revise site-specific management plans taking into account of the important benefits and potential impacts of tourism in Territory.

- ⇒ Management plans were updated in 2015. Lack of more detailed information on threat and monitoring has resulted in no additional information to warrant updating the plans

7.1.4 Establish a contract for the development and maintenance of the South Georgia GIS as a multi-purpose, cross-cutting environmental management tool.

⇒ The contract to update and maintain the South Georgia GIS is held by the British Antarctic Survey. Additional environmental information such as the results of coastal mapping surveys has been fully integrated making it a useful environmental management tool.

⇒ Further work is planned to integrate Regulated Activity Permit data

7.2 Develop a suite of terrestrial Protected Areas and the associated management plans

7.2.1 Collate and update the biodiversity, heritage, wilderness, tourism and science site data that are needed for the protected areas decision making process.

⇒ UN Environment World Conservation Monitoring Centre (UNEP-WCMC) were commissioned to collate the data needed to establish terrestrial protected areas and engage key stake holders to solicit opinion on the various options for protection

⇒ A report detailing the outcomes of this work was published in 2018. This offered various options for consideration by GSGSSI. The report highlighted the mechanisms in place already to address potential threat to biodiversity and the issue of external threats such as climate change, over which GSGSSI does not have direct control

7.2.2 Develop a Protected Area framework and associated management plans.

⇒ Whilst the UNEP-WCMP report presented various options for consideration, none were actioned immediately as more consultation and internal consideration were needed.

⇒ Management plans have not been developed, but plans now are in place to address this and the work is underway.

7.2.3 New Protected Areas to be enshrined in law under the Wildlife and Protected Areas Ordinance (2011).

⇒ Not achieved.

7.3 In accordance with the MPA management plan, undertake a review of the MPA in 2018 to ensure that it is fit for purpose

7.3.1 Continue to monitor populations of target and by-catch fish in commercial fisheries, and manage the impact of fisheries on benthic species and habitats through science and industry collaborative research as set out in Fisheries Management Plans.

⇒ See 5.1.5

⇒ Once every two years, GSGSSI runs a ground fish survey in order to monitor the population status of commercially exploited fish species and common by-catch species

⇒ Monthly plankton trawls for larval fish are conducted from Pharos SG to assess population status of target and by-catch fish in commercial fisheries

7.3.2 Develop programs to monitor the efficacy of benthic closed areas.

⇒ As part of the licence conditions for toothfish vessels, there is a requirement for research fishing which includes work to in Benthic Closed Areas. This information corms part of the MPA review to assess the efficacy of BCA and contributes to ongoing sustainable management of the MPA

⇒ GSGSSI participates in the UK Blue Belt Programme which includes work to assess interactions between the fishery and benthos which includes depth restrictions and assessment of the efficacy of closed areas

⇒ Shallow Underwater Camera System work at shag rocks undertaken by BAS looking at benthic biodiversity

7.3.3 Identify new species and habitat priorities within the MPA for monitoring, particularly in data poor regions.

⇒ The MPA review conducted in 2018 identified the South Sandwich Island as a data depauperate region. Additional monitoring has been undertaken. See 5.1.2 and 5.1.5

⇒ As well as spatial gaps, the MPA review identified temporal gaps in monitoring. In particular, winter was identified as data poor period. To address this BAS initiated a programme deploying GLS loggers on gentoo penguins to investigate foraging patters in the winter months. In addition, a project has been initiated to further investigate the abundance of krill and associated species in winter but this work will take place outside ethe reporting period

7.3.4 Maintain monitoring of krill dependent predators to ensure that the krill fishery has minimal impact on populations.

⇒ There is ongoing monitoring of krill dependant predators including fur seals and gentoo penguins at Bird Island and Miaviken and this information contributes to the sustainable management of the MPA

⇒ Ice fish diet sampling as part of the groundfish survey to better understand interannual variability in the availability of krill as a prey species

⇒ A project has been initiated to surveys of elephant seal abundance at King Edward Cove

⇒ Initiation of trials for use of drone surveys to contribute to monitoring for higher predators including Weddell seal populations at Larson Harbour and king penguins at St Andrews Bay

7.3.5 Undertake a comprehensive review in 2018 of the effectiveness of the MPA, using the best available scientific data, and consulting independent experts and stakeholders. Publish a comprehensive review with conclusions and recommendations as necessary.

⇒ This has been completed and the review is available at: https://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/SGSSI_5year_MPA_Review_Summary_Report_to_GSGSSI_(Nov%202018).pdf

7.3.6 Based on the MPA review, consider, as appropriate, the evidence for potential changes in the way the MPA is managed.

⇒ As a result of the MPA review, legislative changes were made including:

- Increasing no take coverage to 23% of the MPA
- Increasing no take zones around South Georgia to 30 km
- Extending temporal closure of the krill fishery by 2 months
- No take zones established at SSI trench and south of 60S
- Ban on HFO use of carriage for all vessels permitted to operate in SGSSI

Objective 7 – overall summary and recommendations

⇒ The ultimate aim of designation of Terrestrial Protected Areas has not been achieved but a wealth of knowledge has been gained about options available and how best to engage stakeholders so they are fully engaged in the process.

⇒ A clear roadmap for how to progress TPAs now exists and will be a priority for the coming years. Integral to this will be a phased, data led approach where and management objectives are set based on monitoring threat and timescales are contingent on comprehensive data collection.

⇒ All Marine Protected Area activities have been achieved. In particular the 5-year review of the MPA provided clear evidence-based guidance on the success of current management and identification of gaps which have been, or are in the process of being, filled. Review and refinement of sustainable management of the MPA will be an ongoing priority.

Objective 8. Understand and, where possible, mitigate the risks from substances that have the potential to harm the environment such as heavy fuel oil and pollutants present in old whaling stations

8.1. Remediation of risk from waste oil in whaling stations in Stromness Bay and Prince Olav Harbour

8.1.1. Identify suitable project partners and methodologies for removal or remediation of the risks from waste oil in whaling stations.

⇒ Continual monitoring of the condition of structures within the former whaling stations and identification of oil entering the environment

⇒ Work has been undertaken to identify an appropriate project partner with engagement procedures occurring outside the reporting period

8.1.2. Undertake an assessment of the type, amount and distribution of heavy fuel oil within the whaling stations in Stromness Bay and the environmental risks associated with them.

⇒ Work to be undertaken outside reporting period

8.1.3. If funding can be secured, environmental assessments and planning documentation will be developed and externally reviewed as appropriate.

⇒ Outstanding

8.2. Review the carriage and use of heavy fuel in the SGSSI Maritime Zone by visiting vessels

8.2.1. Assess the frequency with which vessels burning heavy fuel oil operate within the Territory.

⇒ A review of the use of heavy fuel oil was commissioned

⇒ During of the 5-year review of the MPA in 2018 and all key stakeholders were consulted on the implications of a HFO ban

8.2.2. Develop, in consultation with stakeholders, a plan to phase out the burning and carriage of heavy fuel.

⇒ In mid-2019 the use and carriage of heavy fuel oil for vessels permitted to operate in the SGSSI MZ was prohibited by law.

⇒ As appropriate, vessels in the fishing feet have been modified to ensure compliance the new legislation

8.3. Investigate options for removal of waste and scrap materials from Southern Thule

8.3.1. Conduct a feasibility study and environmental assessment on the options to remove part or all of the waste material at the old station site on Southern Thule.

⇒ This has not been undertaken as it has not been logistically possible to arrange a specialist visit to the site.

8.3.2. Investigate options and necessity to limit visitor access to the site due to possible disturbance and hazards to human health such as unstable structures and possible chemical contaminants. Discuss options with stakeholders before implementation.

⇒ Visitor access to the South Sandwich Islands ceased in 2018 in order to protect the island chains fragile biodiversity. In the new 2021 SGSSI visitation the commitment to protect the SSI and not permit recreational visits was reaffirmed

⇒ Access from scientific expeditions is allowed but only following a comprehensive environmental and risk assessment. If access to the area of the former station at South Thule was included in activities, an assessment contamination risk or risk from unstable debris would be undertaken

Objective 8 – overall summary and recommendations

⇒ Remediation of oil from former whaling stations is likely to be an extended activity based on environmental risk, heritage assessment and availability of suitable facilities to revise the waste oil.

⇒ Any work on the SSI is challenging and careful consideration will be needed to balance the benefit of site remediation against disturbance of wildlife and risks to human safety

⇒ In contrast, work on HFO has exceeded planes activities and re-enforced the importance of legislative support for policy decisions.

Annex 1 – Selected Bibliography

Andrews, J. & Medley, P. (2018) *MSC Sustainable Fisheries Certification: South Georgia Patagonian Toothfish longline Public Certification Report: Re-Assessment, September 2018* Available online https://fisheries.msc.org/en/fisheries/south-georgia-patagonian-toothfish-longline/@@assessments

British Antarctic Survey (2017) *Bird Island Redevelopment Environmental Impact Assessment*. Available Online https://www.gov.gs/docsarchive/Environment/Impact%20Assessments/Bird%20Island%20Station%20Redevelopment%20EIA%20October%202017.pdf

British Antarctic Survey (2019*) King Edward Point Wharf Redevelopment Project – Environmental Impact Assessment*. Available Online https://www.gov.gs/docsarchive/Environment/Impact%20Assessments/KEP%20Wharf%20Redevelopment%20EIA%20July%202019%20(reduced).pdf

British Antarctic Survey (2019). DY098 Cruise Report: Polar Ocean Ecosystem Time Series – Western Core Box. Available online https://www.bodc.ac.uk/resources/inventories/cruise_inventory/reports/dy098.pdf

Clubbe, C (2018). *South Georgia & the South Sandwich Islands Marine Protected Area 5-year Review Report to the Government of South Georgia and the South Sandwich Islands*. Available online https://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/SGSSI_5year_MPA_Review_Summary_Report_to_GSGSSI_(Nov%202018).pdf

Darby, C., Soeffker, M. & Riley, A. (2018). Blue Belt Overseas Territory Work Plan: South Georgia & the South Sandwich Islands. Available online https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915442/002_Blue_Belt_work_plan_-_South_Georgia_and_the_South_Sandwich_Islands__SGSSI_.pdf

Golding, N. & Black, B. (2020). *Final Report from the DPLUS065: Mapping the Falklands & South Georgia coastal margins for spatial planning project*. Available online https://www.south-atlantic-research.org/wp-content/uploads/2020/05/DPLUS065_2019_20_FinalReport_FinalVersion.pdf

Government of South Georgia & the South Sandwich Islands (2016) *Biosecurity Handbook*. Government House, Stanley, Falkland Islands. Most recent version available online https://www.gov.gs/docsarchive/Environment/Biosecurity/Biosecurity_Handbook.pdf

Government of South Georgia & the South Sandwich Islands (2016) *Conservation Action Plan for Wandering Albatrosses at South Georgia* (2026-2020). Government House, Stanley, Falkland Islands. Available online: https://www.gov.gs/docsarchive/Environment/Birds/SG_Wandering%20Albatross%20Conservation%20Action%20Plan_Final.pdf

Government of South Georgia & the South Sandwich Islands (2016) *Conservation Action Plan for Black-browed Albatrosses at South Georgia* (2026-2020). Government House, Stanley, Falkland Islands. Available online: https://www.gov.gs/docsarchive/Environment/Birds/SG_BBA%20Conservation%20Action%20Plan_Final.pdf

Government of South Georgia & the South Sandwich Islands (2016) *Conservation Action Plan for Grey-headed Albatrosses at South Georgia* (2026-2020). Government House, Stanley, Falkland Islands. Available online: https://www.gov.gs/docsarchive/Environment/Birds/SG_GHA%20Conservation%20Action%20Plan_Final.pdf

Government of South Georgia & the South Sandwich Islands (2016) *South Georgia Non-native Plant Management Strategy 2016-2020.* Government House, Stanley, Falkland Islands. Available online *https://www.gov.gs/docsarchive/Environment/Invasive%20Species/South%20Georgia%20non-native%20plant%20strategy%2020160317.pdf*

Government of South Georgia & the South Sandwich Islands (2017). *Toothfish Licensing Information For Applicants For The 2018 – 2021 Fishing Seasons*. Available online https://www.gov.gs/docsarchive/Fisheries/171115%20Toothfish%20Licensing%202018-2021%20Information%20for%20Applicants%20-%20FINAL.pdf

Government of South Georgia & the South Sandwich Islands (2017). *South Georgia & the South Sandwich Islands Toothfish Fishery (48.3 & 48.4) Management Plan*. Available online https://www.gov.gs/docsarchive/Fisheries/171115%20Toothfish%2048_3%20&%2048_4%20Fishery%20Management%20Plan%20-%20FINAL.pdf

Government of South Georgia & the South Sandwich Islands (2017). *Peer-reviewed scientific papers informing the MPA Review*. Available online https://www.gov.gs/docsarchive/Environment/Marine%20Protected%20Area/180523%20MPA%20Review%20References.pdf

Government of South Georgia & the South Sandwich Islands (2019). *SGGSI Gazette No 2 dated 29th May 2019*. Available online https://www.gov.gs/docsarchive/Legislation/SGSSI%20Gazette%20No%202%20dated%2029%20May%202019.pdf

Government of South Georgia & the South Sandwich Islands (2019). *SGGSI Gazette No 4 dated 21st October 2019.* Available online https://www.gov.gs/docsarchive/Legislation/SGSSI%20Gazette%20No%204%20dated%2021%20October%202019.pdf

Government of South Georgia & the South Sandwich Islands (2020) *Regulated Activity Permit (RAP) Categories*. Available online https://www.gov.gs/visitors/regulated-activity-permit/

Government of South Georgia & the South Sandwich Islands (2020) South Georgia – a visitors guide. Film by Silverback Films. Available online https://www.gov.gs/south-georgia-a-visitors-guide/

Key, J (2018) *Tackling invasive non-native species in the UK Overseas Territories – Technical support to the Government of South Georgia & the South Sandwich Islands*. Available online: https://www.gov.gs/docsarchive/Environment/Biosecurity/GBNNSS%20Biosecurity%20Report%20Jun18.pdf

Key, J (2018) *Tackling invasive non-native species in the UK Overseas Territories – pathway analysis.* GB Non-Native Species Secretariat, York, UK

McIlwaine, P., Darby, C., Kiff, G., Vieira, R. & Soeffker, M (2019). *Report of Survey DY099 Marine biodiversity of South Georgia and the South Sandwich Islands 2019* Available online https://www.bodc.ac.uk/resources/inventories/cruise_inventory/reports/dy099_survey.pdf

UNEP-WCMC (2018) A review of Terrestrial Protected Areas: South Georgia and the South Sandwich Islands. Cambridge, UK