FALKLAND ISLANDS ENVIRONMENT STRATEGY 2021-2040

Falkland Islands Government

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ACKNOWLEDGEMENT:

This strategy would not have been possible without the contributions from multiple individuals from across government and the community of the Falkland Islands who shared their views and helped to inform the vision, objectives and the necessary steps to build the future of our Islands' environment together.

Falkland Islands Government Environment Department

Secretariat

Stanley

Falkland Islands

2021

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1. FOREWORD

The environment is essential for human existence – our health, our wealth, and our overall wellbeing are intrinsically linked to our natural world. It plays a central role in the sustainable development of our economy, our community and our nation as a whole, and it is vital in determining our quality of life. We therefore have a moral duty and responsibility to advocate for the environment and to take meaningful actions to preserve and conserve precious natural resources for generations to come.

We rely on our ecosystems to provide us with clean water, air, food and shelter. Our lands provide grazing for our livestock and healthy soils to grow food; our seas support a wealth of fish and marine life. Many of the services our ecosystems provide us with are irreplaceable. We also benefit from our outdoor spaces as a place to relax, play and keep healthy. In the Falkland Islands, the foundations of our livelihoods are reliant on our environment – fishing, agriculture, tourism – these key sectors would not exist without our natural resources, without healthy ecosystems.

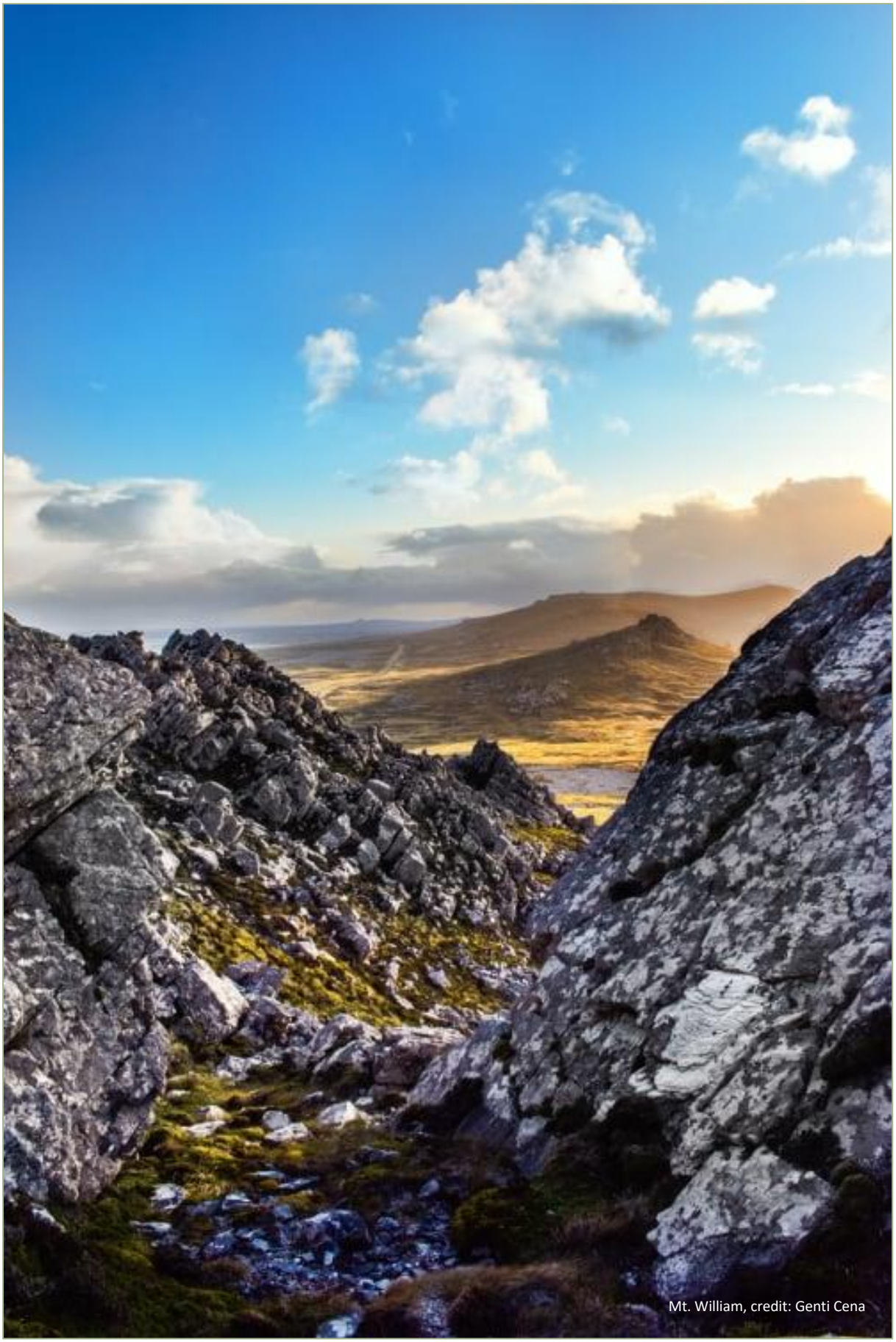
Living closely alongside nature, as we've done for generations, we cannot fail to recognise just how important the natural environment is to us, not just because of everything that it provides, but as a vital part of the Falkland Islands national identity and way of life. Our beautiful Island nation is unlike any other – with exceptional landscapes, seascapes and a diversity of flora and fauna – so we must not ignore the challenges that we face. Through the implementation of this Environment Strategy, we hope to make clear our commitment to respect and protect our unique home and resources.

However, at close to 8 billion people, human society is a dominant influence on our planet and our actions have caused degradation of our environment. Human activity has created waste, overused natural resources, and impacted our global climate. Environmental issues have become more complex and demanding over time and are a challenge for governments across the world. This is no different in the Falkland Islands and we have a role to play in contributing to efforts to tackle the global problems which affect communities everywhere, as well as managing and protecting our own environment and natural resources through local action.

We have already taken steps towards living more sustainably, but there is much more to be done. This strategy recognises the obstacles and opportunities facing us and sets out our objectives for the next 20 years, so that we can work towards a shared vision for the future of our environment. It identifies the issues we need to address to make this future a reality, and some of the actions we will take to get there. It is our hope that everyone will get behind this strategy and do what they can to build a better future together.

While momentum towards sustainability is growing, we need the environment to be at the forefront of our collective conscience. We need everyone in the Falkland Islands – the government, businesses and the public – to not only be aware, but to take action. Together we can, and will, make a difference.

Members of the Legislative Assembly of the Falkland Islands Government



Mt. William, credit: Genti Cena

2. HIGHLIGHTS

OUR VISION

We envision a future where our natural environment is:

For All

The Falkland Islands' natural environment supports resilient, healthy and functioning ecosystems that all our community and future generations can continue to enjoy and benefit from.

Biodiverse

The quality of our habitats is improved, biodiversity has been retained and we benefit from flourishing oceans, coasts, land and freshwater.

Healthy

The Islands' air, water, and soils are clean.

Sustainable

We use and manage our natural resources efficiently and sustainably, and our thriving economy respects our environmental assets.

Adapted

Renewable energy has been embraced, we play our role in tackling the climate emergency, and are able to understand and adapt to global change at a local level.

Connected

Our connection to nature continues to be a vital part of our identity, and engagement with our environment and natural heritage is enhanced across the community.

OUR STRATEGIC OBJECTIVES:

Biodiversity and Ecosystem Integrity

- to continue working towards integrating biodiversity (i.e. considerations of ecosystem integrity) across environmental and economic agendas, acknowledging that the integrity of ecosystems underpins the continued provision of all ecosystem goods and services for current and future generations
- to protect and enhance our biodiversity (ecosystem integrity), reducing its loss through tackling threats
- to work towards preventing the introduction of invasive species, reducing their spread and reducing, eliminating or appropriately managing them
- to mitigate for degradation and promote restoration of native ecosystems, where possible

- to work towards understanding and managing creeping change (slow, incremental environmental degradation) before environmental thresholds are passed that have costlier and fewer solutions
- to increase knowledge of the marine, terrestrial and aquatic environments and biodiversity, through identifying and filling key knowledge gaps, to support effective governance and decision-making

Oceans and Coasts

Target: establish marine managed areas with a target of 15% of our marine waters designated and with management plans

- to have healthy, functioning and robust marine and coastal ecosystems in the Falkland Islands through protections and management
- to ensure that future generations can benefit from marine and coastal ecosystems and the goods and services they provide by sustainably managing human activities which impact our oceans and coasts
- to actively participate in the integrated, cross-boundary management of marine ecosystems in the South West Atlantic, that considers cumulative impacts and contributes to the good condition of marine and coastal ecosystems

Action: establish additional National Nature Reserves

Land and Freshwater

- to manage and protect our native terrestrial and aquatic ecosystems (including wetlands) and the quality of land and water
- to improve terrestrial and aquatic ecosystem integrity, for the benefit of current and future generations, through considering the ecological impact of and improving land-management approaches, practices and incentivisation
- to take an integrated land-water management approach that adopts a long-term view and incorporates ecological considerations alongside social and economic ones

Climate Change

Action: investigate carbon accounting for the Falkland Islands to understand our current net carbon emissions and to help us set targets around carbon neutrality

- to reduce our carbon emissions through transitioning to using renewable (low carbon) energy sources for power generation
- to consider and plan for the possible extent of the multiple effects of climate change for our ecosystems, society and economy and how these may interact with other human impacts
- to understand the potential of native ecosystems for mitigating and offsetting carbon emissions, e.g. peatlands, wetlands and marine ecosystems
- to consider the potential negative environmental effects of climate change mitigation and adaptation measures

Energy and Non-renewable Resources

- to increase our use of renewable energy sources, with a focus on reliable and appropriate energy with low environmental impacts

- to promote energy efficiency and savings, slowing down and stabilising the consumption of energy while ensuring that the needs of people are met
- to consider whole of life impacts of measures intended to reduce energy use or of transitioning to renewable forms of energy

Action: increase our reliance on renewable energy, with Stanley's primary electrical supply being 100% renewable by 2050

- to conduct the extraction of non-renewable resources, including any hydrocarbon development, in a way that values and conserves our unique biodiversity and ecology, supported by effective regulation

Waste and Pollution

- to improve pollution controls in the Falkland Islands, with a particular focus for onshore pollution controls
- to improve waste management in the Falkland Islands, including sewerage, hazardous, and e- waste, to reduce impact on the environment

Action: in partnership with BFSAI, create a waste management facility and a new landfill designed and built to high specifications by 2025 to minimise environmental impact

- to use resources efficiently, keeping them in use for as long as possible to reduce waste and its environmental impacts through the promotion of re-use, remanufacturing and recycling
- to promote changes in behaviour, including consumption patterns, to reduce waste and pollution

Sustainable Development and Quality of Life

Action: improve environmental assessment frameworks for land-based development

- to have development that is sustainable, within ecologically meaningful boundaries, so that the natural environments on which we ultimately depend are not undermined
- to manage and protect our heritage - natural, geological and cultural, our sense of wild places, open skies and small community spirit
- to consider, manage and minimise the impact of economic activities and development on the environment, taking a long-term strategic approach that considers future generations and incorporates environmental assessment
- to consider the strong links between natural environment and human health when making decisions and policies, recognising that an impact on environmental health frequently translates to an impact on human health

Science and Innovation

Action: increase capability within government to dedicate to exploration of opportunities for development in science and innovation (e.g. strategic horizon-scanning)

- to create a strong, well-managed and accessible science and evidence-base to help support decision-making with respect to the environment, including for helping to cope with and adapt to environmental change
- to help facilitate science, research and the development or implementation of new technologies, methods or approaches
- to have a strong and responsible culture of innovation across the Falkland Islands; engaging in horizon-scanning and investigating the potential environmental benefits and impacts of new technologies, industries and practices
- to continue to develop skills to enable innovation and research, e.g. STEM (Science, Technology, Engineering and Mathematics), for the Falkland Islands
- to future-proof technologies and approaches in the Falkland Islands, particularly in light of global shifts, e.g. environmental change, green economy

Communication and Education

Action: work together with the private sector on projects or initiatives that could benefit the environment, in-line with the actions and objectives set out throughout the strategy

- to improve communication and sharing of knowledge, data and information related to the environment
- to promote sustainable behaviour and environmental stewardship throughout the community
- to embed environmental awareness in lifelong learning, including education on the Falkland Islands' natural environment and the relationship between environment, society and economy
- to promote skills development to support the global shift towards a green economy and enable the local community to adapt to respond to environmental issues, e.g. global change, and opportunities in the Falkland Islands

There are many actions we need to work towards the strategic objectives and achieve this future. The actions and targets above are indicative of some of those set out in Chapter 8 (p. 41). Further actions will be developed, prioritised and implemented through the mechanisms set out in Chapter 6 (p. 19).

We'll need to adapt to emerging environmental issues and as new evidence and knowledge is generated. The strategy is therefore envisioned as a long-term but living document that will serve as the start of a journey for everyone across our community.

This is a national strategy, so everyone across our community will be involved in putting this strategy into practice, looking for their own ways they can work towards the vision. The role of government is to provide leadership and direction, as well as guiding more detailed plans for action. Part of this

detailed planning will involve identifying links with people from across our community and ways that they can contribute.

Within government, the strategy takes a “whole of government” approach, which means that responsibilities will lie across all directorates and environmental considerations will be incorporated into policy development and decision-making. The Environment Department will “own” the strategy document. Individual directorates will look to the overarching vision and strategic objectives of the Environment Strategy to guide their own direction and operations, and will also be responsible for delivering individual actions or certain workstreams.

As a first step, to ensure that the objectives are integrated into decision-making, implementation of the Environment Strategy across directorates will be actioned through existing government mechanisms – the corporate planning process, budget process and ExCo reports, as well as through the establishment of an Environment Strategy Programme Board, an internal civil-service mechanism to guide FIG’s delivery of the strategy. The programme board will prioritise actions and address some conflicts between objectives or actions for workstreams flowing out under the strategy. It will bring together teams of representatives from across government with different skills and backgrounds to define and tackle the workstreams flowing out of the strategy. Directorates will report back to the programme board on their activity on a regular basis. The programme board will track progress towards the strategic objectives, putting in place regular monitoring and review mechanisms. It will provide reporting, making publicly available a summary of the key activity every year, with a full review of progress towards strategic objectives every five years.


Cape Meredith Coast, credit: Aniket Sardana

3. OUR HOME

The Falkland Islands, an archipelago in the South Atlantic lying approximately 300 nautical miles off the mainland of South America and 8,000 miles from the United Kingdom, is home to a community of around 3,200 people who live and work in this British Overseas Territory. We are proud of our unique environment and its rugged natural beauty. It's a key part of many of our day to day lives and has been for the history of our Islands, with ninth-generation Islanders having strong links to the Islands' farming and maritime history.

Being an island nation, we have a vast marine environment – the Falklands Conservation Zone – and our coastal ecosystems are important breeding areas for many marine mammals and birds. Many wetlands and freshwater ecosystems dot our Islands and our terrestrial environment has nineteen land habitat types across 12,173 km^2 [1], [2]. From the smallest insects and mosses that creep over our rocks, to the rare and majestic birds that nest on our tussac islands, and the iconic penguins, albatross, seals, whales and dolphins that swim our seas or breed on our shores, our beautiful land and oceans are teeming with life.

It's not surprising then, that our economy depends on our natural environment; from the fisheries that are the cornerstone of our economy, to agriculture which is historically and culturally important, to tourism with growing numbers of people visiting our Islands in recent years.

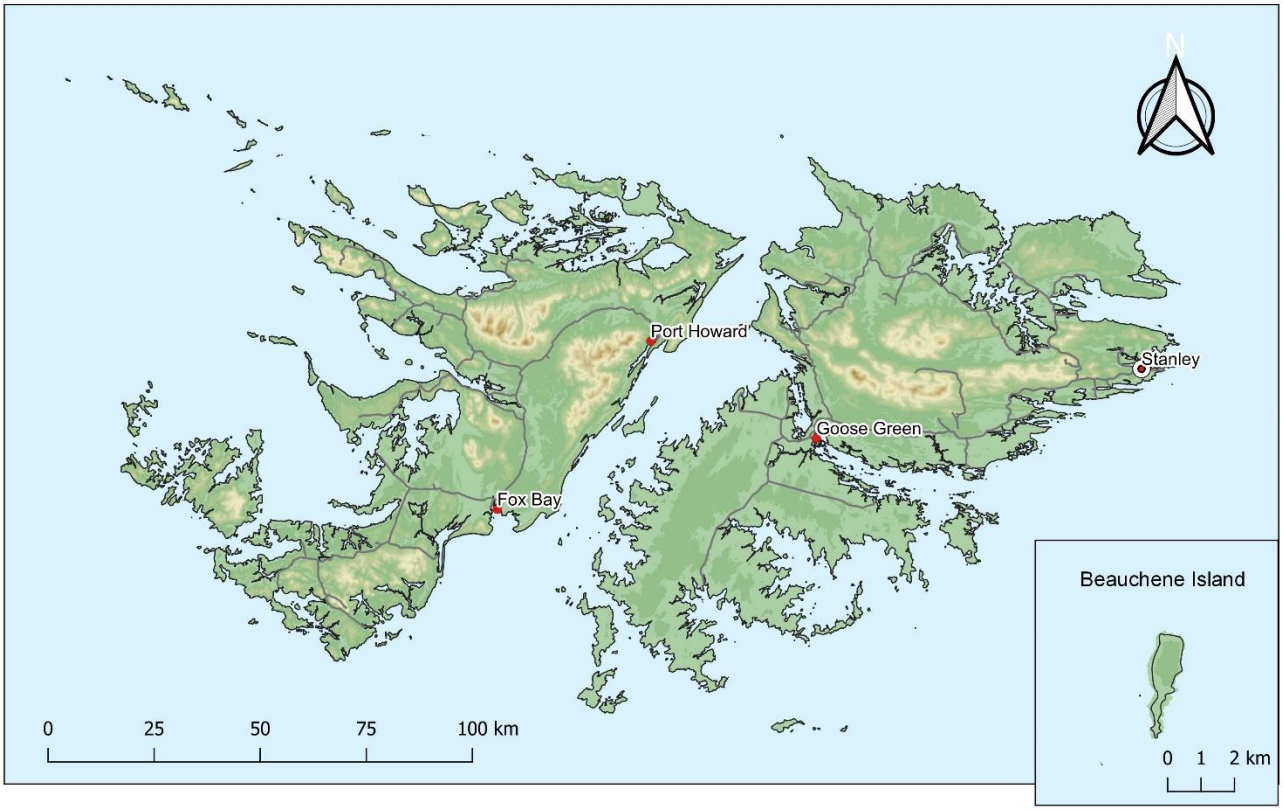


Figure 1: The Falkland Islands comprises two main Islands, East and West Falkland, surrounded by over 700 smaller islands and islets, and Beachene Island (inset) found to the south.

Queen of the Falklands Fritillary, credit: FITB

The Falkland Islands is a British Overseas Territory enjoys a large measure of internal self-government. Falkland Islanders have a right to self-determination, as described under the United Nations Charter. This was confirmed in the 2013 Referendum, in which 99.8% of the people of the Falkland Islands voted to remain a self-governing British Overseas Territory.

We live in a fairly remote part of the world, which can present challenges and opportunities. We have links to the UK and South America via air and sea, and we enjoy many internal transport links – a coastal shipping service, regular ferry service, local air service, and approximately 1,000 km of roads across the Islands. Our capital, Stanley, is home to over three quarters of our population. Everything outside of Stanley is known locally as “Camp”, and is home to numerous farms and settlements spread across the Islands., as well as Mount Pleasant Complex on East Falkland. We are small in size, but big in ambition.

Environment

Our environment is both our home and our livelihood and as such we aim to cherish and protect it through sustainable and responsible management of our own resources.

Our archipelago has a cool temperate oceanic climate, with a low annual rainfall of 450 – 600 mm per year that varies across the Islands, and is dominated by westerly winds. There are nineteen different land habitat types recognised in the Falkland Islands, that support 180 native species of plants, of which 14 are endemic. Broadly, the flora and fauna that live on our land or swim in our waters have affinities with that of Patagonia in South America, and many migratory species have strong links with the Antarctic [1], [3].

When we talk about the Falkland Islands (natural) environment what we mean is the land and controlled waters, and their dependent or associated ecosystems or habitats. This definition includes all living and non-living components including in and on land, the atmosphere/air, and water.


Black-Browed Albatross, credit: Georgina Strange

Most of our land has a connection to the coast or to freshwater, with our aquatic ecosystems (e.g. rivers and estuaries) supporting six species of fish, including the Falklands Minnow and Zebra Trout, as well as a host of invertebrate species.

Being on the edge of the Patagonian shelf, our oceans are fed by the nutrient-rich Antarctic circumpolar current and have a high abundance of demersal and pelagic marine species that make rich foraging grounds for many large marine mammals, such as Orcas, Sea Lions, Southern Elephant Seals and South American Fur Seals, and seabirds like Southern Giant Petrel, Black-browed Albatross and five breeding species of penguin. Many of these species breed on and around our shores. There are six known regularly breeding species of marine mammals in our waters (or hauled out on shore) with 31 different species of marine mammals seen in our waters, including some of the world's rarest, such as the Southern Right Whale Dolphin [1], [4].

There is still much to discover about the environment of our Islands, with knowledge gaps in a number of key areas, and this strategy picks up on the need to fill these. For example, climate is changing and baseline data and analysis are needed to understand the extent of changes and to help with future predictions to enable us to adapt.

Indeed, there are many global and local challenges and opportunities to address with respect to the environment, which this strategy touches on.

People

Over 3,200 people call the Falkland Islands home; more than three quarters live in Stanley, our capital, with the remainder spread across Camp (our rural area). Additionally, our community includes those living and working at the Mount Pleasant Complex, a significant proportion of the population, which is a British Forces South Atlantic Islands (BFSAI) military base.

The Falkland Islands is unique in its way of life, heritage, history, and traditions and customs. Many Falkland Islanders trace their families through nine generations in the Islands, stretching back nearly 200 years. Now, people from over 60 nations have made the Islands their home and we are proud of our diverse and inclusive culture.


Credit: Maria Forman


Credit: Genti Cena

Ours is a small, friendly, and hard-working community. We are resourceful and self-reliant, and enjoy an excellent quality of life in a modern and thriving society. The freedom of our countryside and proximity of our abundant wildlife are cornerstones of our national identity.

Our population grew by 77% between 1980 and 2016. Net migration is the main driver of population increase. Modest population growth is expected over the next 15 years, with a projected average growth rate of approximately 2% per year to meet expected workforce requirements. The Falkland Islands has a relatively young population compared to other developed economies, and a very low unemployment rate at just 1.0%.

Our small population live in more than 1.2 million hectares, an area nearly two thirds of the size of Wales. This means that few people live and farm or work in vast remote areas. Most land is in private ownership or under private control.


Bodie Creek Bridge, credit: Sally Heathman

Being a small, remote community means that there are challenges and opportunities. The population size can make the Falkland Islands 'nimble' in some ways, as changes may be easy to communicate and implement. It is also physically easy to network, identify relevant parties and work together.

Conversely, this also means there are limited resources. There are few people working on a diversity of topics, to achieve many goals with limited time and resources. The challenge of scope and scale can be a barrier to many projects and initiatives. Prioritisation and pragmatism in terms of what is reasonably achievable, what level of resources may be required, and where or how these resources may be acquired is very important. The remote

location of the Falkland Islands can also pose practical challenges for resourcing e.g. getting specialists in for a short period of time, and added costs related to movement of anything from staff, to equipment, to disposal of waste. Because of the remoteness and limited numbers of people, labour costs to achieve projects are also high.

The Falkland Islands has a strong, largely resource-based economy which provides a high standard of living and a broad range of public services. In 2018, the Falkland Islands could be ranked fifth in the world by GDP per capita. Historically based on high-quality wool production, since 1986 the dominant industry has been fishing. Wool and meat also play a significant part – and the emergent tourism sector has seen rapid growth in the last 15 years. As outlined in our economic development strategy [5], our ambitions for long-term sustainable growth and enhanced economic prosperity rely on the development of these main market sectors, as well as improved infrastructure, scientific research, and new activities including offshore hydrocarbon production.

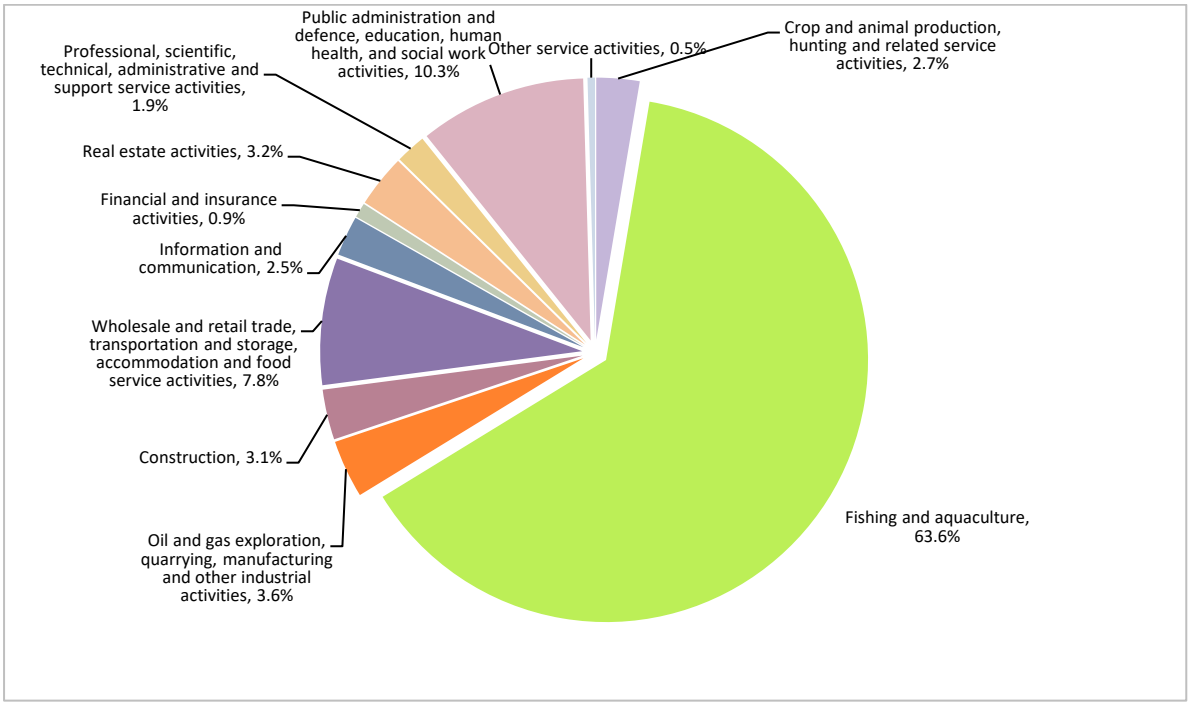


Figure 2: Gross value added[i] by industry in 2018, current prices[ii]. The breakdown of activities in this figure reflects the International Standard Industrial Classification of All Economic Activities (ISIC), i.e. the international reference classification of productive activities, which main purpose is to provide a set of activity categories that can be utilized for the collection and reporting of statistics in a standardized way across countries. Further details may be found in the source *Falkland Islands National Accounts 2009 – 2018*, published 2020 [6].

[i] Gross Value Added (GVA) is the value of an industry's outputs less the value of intermediate inputs used in the production process. GVA broadly corresponds to the sum of wages and salaries, operating surplus and depreciation. GDP is the total sum of GVA from all economic sectors of a nation (plus taxes on products less subsidies on products).

[ii] Figure presents a static picture of the Falkland Islands economy at a given point in time. It cannot be used to directly infer the consequences of changes to output by a given industry. For example, were output from the fishing industry to fall significantly, this would be expected to reduce government revenues, and hence ability to spend on public services; it would also affect the businesses that provide support services to the fishing industry. Conversely, a decline in another industry might free-up labour that could be redeployed elsewhere, mitigating the overall negative effects.

4. BUILDING ON PROGRESS

Environmental challenges are a concern globally and locally in the Falkland Islands. There are many areas where we can improve the way in which we address these challenges. This strategy is largely about identifying these areas and how we can work towards a better future, but before looking forwards, it's also good to recognise some of the progress that the Falkland Islands has made over the last 20 years in sustainably managing our environment and use these as a positive example to build on.

- We've created a new Environment Department to expand capacity with respect to developing policy for and sustainably managing our natural environment.
- Vital environmental research and conservation action has been enabled through our Environmental Studies Budget grant programme and through subvention of local conservation and research organisations. This helps us contribute to our commitments under various international multilateral environmental agreements (App. 2).
- Over the past 20 years, the extent of protected areas has increased. Protected areas have been established at Sea Lion Island, praised for its diversity of marine mammals and seabirds, and the Patricia Luxton Nature Reserve at Chartres, praised for its diversity of rare native and endemic plants.
- In 2012 the South Atlantic Environmental Research Institute was formed by FIG to help focus environmental research and provide a globally leading research hub. The centre has since become independent from FIG and undertakes research in the Falkland Islands and beyond.
- We have introduced measures to prevent the bycatch of marine mammals and seabirds. This has significantly reduced the number of seabirds and marine mammals getting trapped or tangled in fishing gear. We've worked together with industry to introduce and improve various measures in our fisheries like bird scaring devices, discard tanks and seal exclusion devices. At the same time, we have refined fishing techniques and gear use to reduce the bycatch of undersized and unintended fish species.
- We have invested in the annual Falkland Islands Seabird Monitoring Programme, now in its 28th year, keeping track of our key seabird species and helping us to monitor the state of populations.
- Our sustainable management has resulted in good outcomes for fisheries like squid (*Doryteuthis gahi*), and our longline toothfish *(Dissostichus eleginoides*) fisheries is certified as sustainable by the Marine Stewardship Council.
- Biosecurity controls at our borders have been helping to prevent the introduction of new non-native, invasive species and pests. A horizon-scanning tool has enabled us to identify those that are most likely to land on our shores.
- We have several programmes in place to eradicate and control some of our most noxious invasive species such as Calafate, thistles, and rodents from our most sensitive habitats.
- As result of our ongoing invasive species control programmes we have helped to successfully eradicate mice and rats from a number of our Islands and continue to tackle the problem. As of 2021, 70 islands (equating to 6,615 ha) have had rodents eradicated and been certified as rodent-free, so that 271 islands are now rodent-free.

- Because our marine environment is precious, it is important that developments meet a high standard. We've therefore worked over the last 20 years to ensure that a rigorous and bespoke regulatory framework is in place for offshore oil industry development and kept up to date to reflect international best practice. This framework has enabled significant development proposals of an offshore oil industry to be appropriately scrutinised for environmental risks and these risks to be mitigated in proposals.
- We've also created a new Maritime Authority with the remit, resources and expertise to protect the maritime environment within the waters of the Falkland Islands.
- Wind turbines have been installed for renewable energy to help meet power demands in Stanley; 30% of Stanley's energy production is met by wind energy.
- We have been promoting renewable energy uptake through grant systems (via the Falkland Islands Development Corporation - FIDC) over the past few decades, with more than 90% of farm businesses in Camp using renewable energy sources. We continue to promote further expansion of renewable energy source consumption and energy preservation, for example, currently encouraging people to switch to renewable solar-thermal heat sources for their heating or improving the thermal efficiency of their domestic properties through FIDC grant schemes.
- We've reduced our energy consumption by installing energy-efficient LED streetlights in Stanley. Through an ongoing replacement programme begun in 2017, and with all new installations being energy efficient, more than 50% of our streetlights are now energy-efficient LEDs.
- New buildings, including the recently built Falklands College, flats on Brandon Road and Sapper Hill, as well as the upcoming FIG housing in Bennett's Paddock are using air-source heat pumps as a replacement for fossil fuel boilers, reducing our overall use of fossil fuels.
- We've partnered with BFSAI in the introduction of tin and glass recycling, with 102.9 m^3 saved from landfill in this first year, which is equivalent to 10-15% of domestic consumption.

However, there is still much to be done and areas in which we could improve. This is why the strategy seeks to identify issues and opportunities in relation to the environment and to provide direction to help us face these challenges in a collaborative and strategic way going forwards.

Surf Bay, credit: Genti Cena

5. VISION 2040

Our vision for the future of the Falkland Islands, between now and 2040, is that it will be:

For All
The Falkland Islands' natural environment supports resilient, healthy and functioning ecosystems that all our community and future generations can continue to enjoy and benefit from.

Biodiverse
The quality of our habitats is improved, biodiversity has been retained and we benefit from flourishing oceans, coasts, land and freshwater.

Healthy
The Islands' air, water, and soils are clean

Sustainable
We use and manage our natural resources efficiently and sustainably, and our thriving economy respects our environmental assets.

Adapted
Renewable energy has been embraced, we play our role in tackling the climate emergency, and are able to understand and adapt to global change at a local level.

Connected
Our connection to nature continues to be a vital part of our identity, and engagement with our environment and natural heritage is enhanced across the community.


Credit: Allan White

6. THE STRATEGY IN PRACTICE

The Falkland Islands Environment Strategy is a key document that will guide the environmental priorities, policy creation and work of the Falkland Islands Government (FIG) over the next 20 years. Realising our ambitious vision requires, among other factors: good data and evidence to underpin policy and decision-making; strong governance and reporting; robust implementation measures, and co-operation across the community, our approach to delivering the strategy will evolve over time as we learn more about the extent and urgency of the issues we face and the most effective ways to tackle them. However, several principles that form our starting point are outlined below.

Action across the community

Everyone can, and must, play a role in protecting and enhancing our environment if we are to realise the future we want, and the Strategy provides a national framework to guide this. Achieving the objectives set out in this strategy will require participation from individuals and organisations, working together in collaboration with government; a combination of top-down and bottom-up effort across all sectors and driven by the groups below will help to achieve implementation.

- For **business and industry**, this strategy indicates key strategic objectives and workstreams with respect to the environment. The objectives and areas of action can help both government and the private sector to identify opportunities for private-public partnerships or other ways to work together to achieve a common vision.
- For **non-governmental organisations** operating in the environmental sphere, this strategy sets out Falkland Islands environmental challenges and opportunities and some of the actions government plans to take to address these. This may help to shape local research priorities and provide guidance for how non-governmental organisations (NGOs) may wish to work towards these common objectives.
- For **members of the public**, this strategy details the government's commitment to protecting, managing and enhancing our environment. Everyone in the Falkland Islands has a role to play in building our future together and the strategy can help us all think about how we want to do that.
- For **BFSAI**, this strategy serves as a vehicle to identify opportunities to continue to work collaboratively on issues related to sustainability and the environment for the benefit of people living and working in the Falkland Islands.
- For **those in government**, this strategy sets an overarching policy direction in relation to environment, lists a shared set of objectives to work towards, and can inform decision-making at all levels. We will work closely with all of the groups identified above to understand how they can contribute, including through providing expert advice, to achieving the strategic objectives as work progresses.

This is a national strategy, so everyone across our community will be involved in putting this strategy into practice, looking for their own ways they can work towards the vision. The role of government is to provide leadership and direction, as well as guiding more detailed plans for action. Part of this detailed planning will involve identifying links with people from across our community and ways that they can contribute.

Figure 3: The Strategy in Practice.

Implementation within FIG

Within government, the strategy takes a "whole of government" approach, which means that responsibilities will lie across all directorates and environmental considerations will be incorporated into policy development and decision-making. Achieving the strategic objectives and actions will be a co-ordinated effort with, where possible, pooling of resources to tackle the issues at hand. In other words, we seek to take an interdisciplinary approach to tackling environmental challenges; that is, an approach which focuses on the issue or objective and identifies the appropriate resources and skills needed to tackle the problem, drawing from across government and beyond government.

The Environment Department will "own" the strategy document – however individual directorates will look to the overarching vision and strategic objectives of the Environment Strategy to guide their own direction and operations, and will also be responsible for delivering individual actions or certain workstreams. .

As a first step, to ensure that the objectives are integrated into decision-making, implementation of the Environment Strategy across directorates will be considered through the following existing government mechanisms:

- **Corporate planning process:** to identify key workstreams for directorates
- **Budget process:** directorates will be required to bring forward budget submissions for the work allocated to them
- **ExCo Reports:** which will be required to contain an explanation of how the contents of the paper supports the delivery of/aligns with the Environment Strategy or not

Successful implementation of the Environment Strategy in the long term will rely on government moving away from a siloed approach which works only within the existing remit of government directorates. Overall FIG's delivery of the strategy within government will be guided by a new Environment Strategy Programme Board, bringing together representatives from across government, to help guide implementation and provide Executive Council and the public with regular updates on progress. The programme board will bring together teams of representatives from across government with different skills and backgrounds to further define and tackle the workstreams flowing out of the strategy, which may include action plans for specific topics. Action plans will be expected to incorporate, but not be limited to, the actions set out in the strategy. The action-planning stage will also provide a further opportunity to identify potential links with those outside government.

The programme board will also have lead responsibility for co-ordinating the integration of strategy into the work of all directorates, and directorates will report back into the programme board on their activity on a regular basis. They will help to prioritise actions and address some conflicts between objectives or actions for workstreams flowing out under the strategy.

Measuring progress

Tackling environmental problems, which are complex and multifaceted requires change to the way we do things and creative solutions. It will also take time to successfully implement. Just as the environment degrades over time, with slow creeping change (see Chapter 7.1), environmental improvement will not always be immediately visible. It will take time for things to change. To ensure that we stay on track, we will need to measure our progress.

The Environment Strategy Programme Board will track progress towards the strategic objectives putting in place regular monitoring and review mechanisms to track the success of steps we are taking to achieve our objectives and using a range of different metrics. Metrics will include:

- Indicators, which show a statistical trend over time [7] e.g. quantity of waste landfilled, and
- Performance measures [7], which focus on policy interventions and can include quantitative measures, such as number of tussac seedlings planted, or process-based measures such as the introduction of a new protocol or scheme.

The Environment Strategy Programme Board is anticipated to provide reporting, in the form of a publicly available summary of key activity on an annual basis and a full review of progress towards strategic objectives every five years. Internal tracking of progress, actions and planning will take place

on a more regular basis through the programme board, and operational objectives (which will be the responsibility of individual directorates and some of which will flow out of the action plans) will be monitored and reviewed by directorates.

Mechanism for Review

The natural environment is subject to variation and uncertainty, and as highlighted in Chapter 7 there are many knowledge gaps for the Falkland Islands. It's therefore probable that new issues or threats to biodiversity may emerge or become more or less severe over time. This coupled with changes in the Falkland Islands society and economy that are likely to take place over the next twenty years, highlights the need for the strategy to be a living document. At the same time, it is useful for the document to be long-term so that there is continuity and ongoing work towards clear objectives across changes in civil service and government. For this reason, the strategy spans a long period of time but has a built-in review mechanism to ensure that the strategy itself is refreshed periodically. This is likely to coincide with the 5-year reporting process, after which strategic objectives can be reviewed.

For example, where there are major emerging issues or opportunities with respect to the environment, where new evidence suggests changes in the severity of the issues identified in the strategy, or where objectives have been met. This review process is intended to allow for adjustments to ensure that we continue working towards meeting our vision.

Resourcing

Resourcing will be a key factor in delivering the objectives set out in this strategy – and the right mix of public and private funding and financing will be a critical element of this. However, resourcing doesn't only mean

monetary investment. It can also mean: capacity, time, skills, guidance, advice, and countless other resources. The allocation of the resources needed to implement this strategy will be guided by the priorities of the Assembly, and will be subject to consideration in future budget processes.

7. CHALLENGES AND OPPORTUNITIES

Evidence, sometimes anecdotal, suggests that there are many potential issues which affect the natural environment of the

Falkland Islands. Many of these issues are global problems but applied to the local context, while others are specific to our Islands. There are also opportunities to try to tackle some of these issues and better manage our natural environment.

To help us plan the future of our Islands' environment together, we have spoken to people from across our community including the public, scientific experts, businesses, and conservation groups. Through this process and the examination of international strategies and major environmental trends, we identified key issues and opportunities, which were then backed up by further available evidence (for full description of process see Annex 1). These are highlighted throughout this chapter, and are grouped into different themes. Many of these issues and opportunities are interrelated and cut across themes, and the themes are also interrelated. This is because the natural environment, the societies and economies it supports, and environmental problems are complex in nature. In this section we attempt to categorise these issues, as far as possible, to make it easier to plan to tackle them (see Chapter 8 Strategic Objectives & Actions).

7.1. Biodiversity and Ecosystem Integrity

Biodiversity refers to the biological diversity of life on earth, from the millions of species of organisms and their genetic diversity to the variety of ecosystems they inhabit. This biodiversity is key to our wellbeing; ecosystems provide us goods (like fish or peat), and services (like cleaning our water or regenerating our soil) that we rely on. Ecosystems can best provide us with services when they are healthy and functioning properly. Ecosystem integrity refers to the state of ecosystem structure and function; healthy ecosystems – those that have good integrity – have resilient structures and function to 'keep nature running', providing the ecosystem services that support life. Most of the contributions that ecosystems make to our lives are not fully replaceable and others are completely irreplaceable [8]–[10].

> ***Ecosystem*** *- an ecosystem is a community of organisms, including humans, interacting with each other and their non-living environment (e.g. water, rocks, air). The concept usually includes the processes that make the system function. Ecosystems are usually defined within geographic boundaries.*
>
> ***Ecosystem health or integrity*** *– refers to the condition of the ecosystem. Generally, an ecosystem is considered to be healthy when it maintains its organisation and functioning and is resilient to stress over time.*

The Falkland Islands has a great deal of native and endemic biodiversity to celebrate and care for, from Cobb's wren to sealions to Dusen's moonwort, from tussac islands to peatlands to coldwater coral reefs. It is also home to some species that are globally threatened, like the Southern and Northern rockhopper penguins, or protected, like Black-browed albatross. This biodiversity is important to us, our children, our Islands, our economy and our planet.

It is clear that at a global level, human activity, increasing with population growth and consumption, is eroding the natural systems that our societies and economies depend on. This has led to a decline in biodiversity and the integrity of marine, terrestrial and freshwater ecosystems worldwide. A recent global assessment shows that: three-quarters of the world's land has been altered; growing cumulative environmental impacts affect two-thirds of our oceans; 85% of wetlands have been lost worldwide; and accelerating global species extinction rates are already tens to hundreds of times higher than the average rate during the last 10 million years. Ecosystem extent and condition have decreased by 47% from their natural baselines and 14 to 18 categories of ecosystem services have declined. The main causes of ecosystem degradation and biodiversity loss are changes to land-use and sea-use, exploitation and harvesting of organisms, climate change, pollution, and the spread of invasive, alien species [9], [10]. Since 1970, trends in agricultural production, fish harvest, bioenergy production and harvest of materials, e.g. wood, fibre, fuel, have increased [9], [10]. Human activities often cause slow, incremental and cumulative environmental degradation that goes unnoticed until it reaches a critical threshold, when the change becomes obvious and is much more costly to tackle, or irreversible [11].

Native species *– species of organisms naturally occurring in an area but not limited to that area; they are naturally found elsewhere in the world as well. For example, Gentoo penguin or Striated caracara.*

Endemic species – *species that are naturally occurring and are ONLY found in that area. i.e. Falkland Islands endemics are found nowhere else in the world. For example, the Lady's slipper (*Calceolaria fothergillii*)*

Exotic or introduced species – *species that are introduced from outside the area; non-native species. For example, tomatoes.*

Alien invasive species – *species that are introduced from outside the area and that become problematic for the natural environment – spreading and reproducing with ease and invading (and usually disrupting) natural ecosystems to the detriment of native species, habitats and ecosystems. They also often have direct negative effects on humans by damaging property or agriculture. For example, earwigs or Calafate.*

In the Falkland Islands, population and development levels are low, but there are still pressures on the natural environment such as farming, fishing, development, introduction and spread of invasive species, pollution, and climate change. Historical and current human activities have resulted in degradation and decline of some species, habitats and ecosystem types.

There are many opportunities to be explored to better manage our natural environment and protect and improve the prospects of our species, habitats, and ecosystems. Maintaining ecosystem integrity and resilience, in part through maintaining biodiversity, is key to supporting our wellbeing and the wellbeing of future generations. It should help to ensure that our natural environment continues to naturally clean our water, support our fish stocks, regenerate our soils, feed our livestock and be home to the incredible wildlife and ecosystems we want to enjoy long into our future.

[12]

Ecosystem services

These can be thought of as the contributions that nature makes to humanity. From a human perspective, they are what ecosystems provide to us. Ecosystem services can be divided into four different types:

- ***Provisioning Services**: the products we get from ecosystems like wood, fuel, fibre, fresh water and food.*
- ***Regulating Services**: ecosystems regulate the natural environment, e.g. taking chemicals out of the air or preventing soil erosion.*
- ***Cultural Services**: the non-material benefits we enjoy through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences, e.g. cultural heritage values, sense of place, ecotourism and recreation.*
- ***Supporting Services**: we usually don't notice these until they stop happening, but they are the services that keep ecosystems going and allow them to provide all the other types of services we enjoy, for example nutrient cycling, water cycling or soil formation.*

Issues and Opportunities:

- **Biodiversity loss is recognised as a global issue**. Threats to biodiversity and ecosystem integrity, such as development, resource extraction, land-use change, and invasive species, need to be managed to halt and reverse ecosystem degradation. More measures, e.g. establishment of protected areas, need to be implemented in the Falkland Islands to tackle these threats.
- **There is a need to integrate biodiversity and ecosystem health across environmental and economic agendas.** It is a global challenge to ensure that economic activities take biodiversity into account, and there is no "one size fits all" solution to this problem.
- **Cumulative, incremental environmental degradation is often slow and goes unnoticed** until it becomes severe and difficult, costly or impossible to reverse; e.g. biodiversity loss, invasive species spread. Creeping degradation of the environment is easier and more cost-effective to tackle early on, but requires early identification and action. Equally, improvements are often also incremental, and can take place slowly over long periods of time.
- **Connectivity is not always considered**, between marine ecosystems, marine-terrestrial connectivity or populations of species, for example, or factored into management and policy decisions.

7.2.Oceans and Coasts

As an island nation, oceans and coasts are vital to the Falkland Islands. We are surrounded by a vast ocean area, the Falklands Conservation Zone, which is teeming with life, from microscopic plankton to massive whales. It contains many different ecosystems and habitats including kelp forests, cold water corals, rocky reefs, maerl beds, and soft-bottom (sandy or muddy) habitats. Marine ecosystems form an important part of the Falklands' biodiversity; a great many of our species spend all or most of their lives in the ocean or along the shore, while others come into our waters or onto our shores to breed.

Our coastline covers rocky and sandy habitats that extend into terrestrial habitats like tussac or dune-slack blue-grass, and there are coastal cliffs, especially in the south-west [1]. In island environments, there is typically strong connectivity between marine and terrestrial ecosystems, and this connectivity should be borne in mind when reading this section and others, like land and freshwater.

Globally, marine ecosystems from the coast to the deep sea are affected by increasing human pressures and the cumulative impact of these, including ocean-acidification, climate change, fishing and pollution (see also Chapter 7.4 and 7.6). Our oceans can also be important carbon sinks, helping to mediate the effects of climate change. Marine ecosystems provide many important services, e.g. the provision of living resources like fish, nursery and feeding grounds for many species, climate regulation or the treatment and purification of waste.

Our oceans and coasts are a core part of the Falkland Islands economy; they provide the marine living resources that support our fisheries, the sea birds, marine mammals and associated species that tourists come to see, and the ports and shipping routes that connect us to the wider world. Our fisheries depend on healthy marine ecosystems and fish stocks. Globally around 33% of fish stocks are considered overexploited and there are many examples of stock collapses [10]. In the Falkland Islands, our marine ecosystems are in a comparatively good condition. The yields of some fished species have declined, but others remain stable or are increasing; one of our main fisheries is certified as sustainable by the Marine Stewardship Council. There remains a need to build on existing work, and there is ongoing policy development with respect to fisheries. There is also a small aquaculture sector and ongoing hydrocarbon exploration. Marine Spatial Planning began in the Falkland Islands in 2014 and has led to the identification of sites that could be protected as Marine Managed Areas; policy work is ongoing. It's key that we manage our marine environment in a sustainable way for the long-term prosperity of our Islands.

Issues and Opportunities:

- **There are multiple global human impacts on oceanic and coastal ecosystems,** e.g. ocean acidification from climate change, marine pollution, invasive species proliferation and pressure from fisheries. These have cumulative effects on marine ecosystems that threaten the vital social, economic and environmental services they provide and which require integrated ocean governance that spans geographic/political boundaries.
- **There are gaps in protection for marine and coastal ecosystems, habitats and seascapes in the Falkland Islands.** While many iconic species of wildlife are protected in the Falkland Islands and significant work has led to the identification of potential sites as Marine Managed Areas, there is a need to improve management of certain habitats, ecosystems or areas where

limited protections are currently in place, such as the inshore <3 nm from the territorial baseline where fishing cannot occur through powers of the Director of Natural Resources via fishing license conditions.

- **Sustainable management of the marine environment and its uses is a key issue in the Falkland Islands, as it is globally.** This includes ensuring ecosystem integrity and the continued provision of ecosystem goods and services. There remain challenges that will need to be addressed to enable sustainable management, including:
    - moving towards an ecosystem approach to fisheries
    - collecting additional scientific data on species and the natural environment to fill existing knowledge gaps and create a better understanding of marine ecosystems, including exploited offshore ecosystems
    - lack of regional fisheries management, which is important because ecosystems and biodiversity don't align with geographic and political boundaries
    - evaluating the environmental impacts of potential large-scale aquaculture
- **There are multiple uses of marine ecosystems** which can sometimes conflict with each other or, if not carefully managed, **collectively undermine ecosystem integrity**. It's important that human activities within these marine areas are carefully planned and zoned to ensure stewardship of our biodiversity and ecosystems, while allowing economic and social wellbeing. Marine Spatial Planning is one tool to address multiple use conflicts.
- **There are key knowledge gaps when it comes to the oceanic and coastal ecosystems of the Falkland Islands**. There has been significant research and knowledge accumulated on the marine environment and species. However, relatively unstudied ecosystems, environmental processes, areas, and species remain, especially below the high-water mark.
- **More understanding of marine invasive species in the Falkland Islands is needed,** including types present, and investigation of effective prevention and control measures.

7.3.Land and Freshwater

The Falkland Islands has a history of living close to the land, since the early gauchos and settlers farmed sheep and cattle. Agriculture, for food and fibre production, continues to be important culturally and for employment. Various terrestrial (land) and aquatic (freshwater) ecosystems comprise the 12,173 km^2 of land that make up the 780 islands and islets. Geographically, there are three main upland areas above 600 m. The deeply indented coastline forms sheltered inlets, and there are a great many wetlands and freshwater bodies dotted across the Islands, including coastal barrier ponds, oxbow ponds, glacial tarns, erosion hollows, and slump features in peat. The nineteen terrestrial habitat types include grassland, coastal tussac, fern beds, dwarf shrub heath, bogs, fen, marsh and swamp and montane habitats, among others [1], [3].

Terrestrial and aquatic ecosystems include many native species and provide a variety of ecosystem services; for example, they provide and purify freshwater, pollinate crops, provide food and wool, provide places for recreation, tourism and relaxation and purify our air. Ecosystems like wetlands and peatlands – important habitat types in the Falkland Islands – play an important role in climate regulation by trapping and storing carbon dioxide (greenhouse gases) from the atmosphere and helping to offset climate change. The functioning of these ecosystems supports our society and

economy. For example, ecosystems support agriculture, native vegetative cover helps retain soil and prevent erosion, and functional ecosystems naturally cycle nutrients that are essential to growing plants that we, or livestock, eat.

But as much as we rely on ecosystems for supporting us, we also compete with ecosystems for resources like space and freshwater. Most of our native terrestrial ecosystems in the Falkland Islands have been modified by agriculture and other human activities, and the introduction of invasive species. Certain habitat types are thought to have declined in extent or quality. This is also a global problem; land-use change driven by agriculture and urbanisation drives ecosystem change and loss, with nearly a third of the world's land surface and 75% of all freshwater resources used in crop and livestock production. While urbanisation is almost non-existent in the Falkland Islands, much of our land is under livestock agricultural production. We also depend on freshwater for human consumption and various industries. The effects of climate change will compound problems for ecosystems in many areas. This should concern us because, beyond the loss of unique and irreplaceable species and habitats, degraded ecosystems provide fewer or lower quality services to us and we may see this in polluted water, disrupted water cycles, changes in rainfall or soil moisture, erosion of land, the loss of certain habitat types or soil fertility, and so on. This paradox – that we need to use nature to live and provide our incomes but we also depend on it – is one that all countries face and we are no exception.

Until the 1970s, almost all of the Falkland Islands, including small, adjacent offshore islands, was grazed. This significantly impacted land and freshwater habitats, though the extent of impacts is unknown. Livestock agriculture continues to be an important livelihood and way of life for many Falkland Islanders, with most land still farmed. Tourism is also of growing importance as an alternative industry, with domestic and international tourists visiting different locations around the Falkland Islands to enjoy the native wildlife and the outdoors. Like all human activities, tourism also has impacts on ecosystems (see also Chapter 7.7), and depends on the provision of ecosystem services like fresh water. It's therefore important that these human activities are managed and that our land and freshwater environments that provide the ecosystem services are cared for. In other words, that we find a way to continue to live with and from the land while keeping nature healthy and being good custodians of our land and freshwater for future generations.

Issues and Opportunities:

- **More measures are needed to manage ecosystems on land and in freshwater, including protections, restoration, and prevention of degradation.**
- **There is limited baseline knowledge (i.e. key knowledge gaps) for aquatic and, to a lesser extent, terrestrial ecosystems in the Falkland Islands.** Improved understanding of these ecosystems, and the threats facing them is needed to underpin efforts to manage, protect, maintain, and restore them in a systematic, evidence-based way. Improved evidence will aid decision-making and help prioritise areas for action and direct resources effectively.
- **Improved land-water management and planning is needed**, taking a forward-looking, ecosystem-based approach which is sensitive to the needs of the environment – considering ecological effects and long timescales, whilst also catering to the wellbeing of the population.

For instance, considering water retention and availability, investigating the re-use of grey-water, or alternative means of acquiring and managing water.

- **The reasons for success or failure of past management actions, including restoration, are not always understood**. For example, in the case of restoration a number of factors may have been at play including different restoration methods, plant types used, some areas being more or less amenable to restoration, or the long time-scales for successful restoration.
- **Conflicting or competing demands can often arise between agricultural/land management practices and environmental measures, especially in the short-term.** Agricultural practices have a huge impact on our environment. Equally, the long-term sustainability of agriculture is dependent on healthy ecosystems.
- **Environmental and ecological considerations could be further incorporated into agricultural advice.** Finding ways to maintain a sustainable income from farming while considering and managing environmental impacts and the ecological underpinnings of agricultural production is a key challenge, and the information available to farmers should reflect this.
- **Land valuation** does not explicitly take account of biodiversity, ecosystem integrity, environmental variables and the variation in the quality of the land on the basis of past management.
- **Land degradation.** Erosion and smothering, diminishing soil quality, and vegetation changes are all apparent and are thought to be caused by a mixture of historical land management practices and the fact of our existing climate, as well as climate change.
- **Terrestrial invasive species and biosecurity.** Whilst successful work is already underway, there are continuing risks from new introductions and the spread of already introduced species, particularly to invasive-free islands, which should be controlled. There are also opportunities to increase awareness in the community and encourage individual action.
- **Land appears to be drying out and rainfall patterns appear to be changing**. This is a potential threat to aquatic ecosystems, and could exacerbate problems in terrestrial ecosystems, with increased competition between ecological and human demands for water. Further data are needed to understand this issue.
- **Wildfires.** Increased ecological understanding would be beneficial. There are limited options to manage wildfires in Camp and the Outer Islands, which can damage and destroy land to the detriment of agriculture and the environment, e.g. releasing large carbon stores into the atmosphere through burning of peat.
- **Much (approximately three quarters) of the land in the Falkland Islands is under private ownership**, so measures to manage, improve or protect land should be suitable to be taken up and implemented by private individuals.
- **There are practical challenges to implementing measures to manage the environment.** Scale can be an issue. There are limited resources (e.g. funding, labour, equipment, seedlings) and time for implementation – particularly on farms, where there are often only a handful of people caring for very large areas with an average of 2.6 persons per farm and an average farm size of around 10,000 ha.

7.4.Climate Change

Over the past few centuries as society has industrialised, human activity like the burning of fossil fuels, land-use change and intensified agriculture have released large quantities of greenhouse gases (e.g. carbon dioxide or methane) into the atmosphere. At the same time large-scale land-use change and deforestation has reduced the ability of the natural environment to take up and store these gases. This has meant rising levels of greenhouse gases that have and will continue to warm the atmosphere and result in large-scale changes in climate – e.g. changes in rainfall and meteorological patterns, increased severity and frequency of extreme weather events in some areas (e.g. hurricanes or tropical storms) – and changes in ecosystems. Warming is causing glaciers and the polar ice caps to melt and, in turn, sea levels to rise. Elevated levels of carbon dioxide gas in the atmosphere means more carbon dioxide dissolves in the oceans and leads to seawater becoming more acidic, a phenomenon known as ocean acidification. Ocean acidification causes changes to marine ecosystems, affecting phytoplankton (small, photosynthetic organisms), the physiology of many species, and makes it difficult for many marine organisms to build their calcium carbonate shells or structures.

Studies in the Falkland Islands have suggested that climate change is likely to have a multitude of effects on our ecosystems. Soils are likely to dry out and lose carbon content, with potential impacts on soil health. There is an increased risk of fires, especially in habitats like dwarf shrub heath, tussac and bogged acid grassland that are dry and flammable. Certain species, particularly those near the edge of their range, may be at risk due to changes in climate that mean the local conditions will no longer be suitable to their physiology. Climate change may also worsen the impact of invasive species and pests, by creating more suitable climate conditions for them [13]. There is less information on the potential effects of climate change for the marine environments of the Falkland Islands, but based on changes and studies from elsewhere these are likely to include changes to food-webs and species distributions, ecosystem level shifts and potential loss of species. Changes for land, freshwater and marine systems are likely to be significant for the economic activities, like fisheries and agriculture, that they support.

We all contribute to climate change by using fuel to power our vehicles and electricity in our homes, through our agricultural and other practices. The Falkland Islands makes a globally small contribution to greenhouse gas emissions, although we still give consideration to this (see also Chapter 7.5). However, we also have a number of ecosystems like peatlands, wetlands and kelp forests that are known to store carbon, removing it from the atmosphere and helping to counteract climate change. Globally, marine and terrestrial ecosystems are the main sinks for carbon, sequestering 5.6 gigatons of carbon per year or around 60% of humanity's global emissions [9]; for example, the Falkland Islands kelp forests have been estimated to sequester around 299,000 tonnes of carbon dioxide a year [14].

Issues and Opportunities:

- **We have already begun to experience some of the negative effects of climate change and there is the growing potential that climate change will further affect our environment and economy.**

- **Globally the effects of climate change are known to interact with other human activities** and lead to more severe impacts on the environment. This process, which is likely to also have an impact in the Falkland Islands, can accelerate environmental degradation and other issues.
- **We will need to adapt to and mitigate climate change and its impacts**, including planning to cope with some of the above effects and their secondary consequences for the Falkland Islands environment, society and economy.
- **There is a level of unavoidable uncertainty about climate change and its effects**. At the same time, there is scope to understand more, and model what the impacts could be in the Falkland Islands.
- **We have limited meteorological data and there is a need for increased long-term climate data (spatially) across the Islands.**
- **Adaptation and mitigation measures, when scaled up, may have unintended consequences**; e.g. large-scale wind farms could disrupt migratory behaviour of birds. The potential negative side-effects of mitigation and adaptation measures should be assessed and minimised or avoided – however some trade-offs are likely to be necessary.
- **Evidence of the real potential of offsetting is needed**. It may be possible to offset greenhouse gas emissions in the Falkland Islands through our natural environments to help mitigate climate change at a global level. We need a better understanding of the feasibility of this option, what the outcomes might be, and how it could work in practice.

7.5.Energy and Non-renewable Resources

This theme relates to energy - including the generation and use of electricity, heat and transportation – and to the extraction (for export) and use of non-renewable resources (e.g. hydrocarbons) in the Falkland Islands. The generation of energy impacts the environment in a number of ways, including through the creation of emissions, such as air pollutants and greenhouse gases (mainly carbon dioxide) from the burning of fuels, or through their construction, operation and end-of-life, e.g. waste from solar panels or batteries (see also Chapter 7.4 and 7.6). Renewable energy sources are generally considered better for the environment as, unlike fossil fuels, during their operation they do not create emissions such as greenhouse gases that cause global climate change, or air pollutants like particulate matter or oxides of sulphur that are linked to respiratory health issues. Although, they also have environmental impacts, e.g. wind turbines can create a risk for birds.

> ***Resources*** *are natural assets (raw materials) that are found in nature and can be used for economic production and consumption.*
>
> ***Non-renewable resources*** *are natural resources that are not replenished in time frames relevant to human planning. This means that they typically get 'used up'. For example, coal, oil or ore-bearing rocks.*
>
> ***Renewable resources*** *are natural resources that are replaced in time frames that are relevant to human planning; e.g. fish or trees. These kinds of resources are mainly considered in sections 7.1-7.3.*

The Falkland Islands currently produces its electricity from a mix of fossil fuels (diesel generators) and renewable energy. Wind is the main renewable source of energy, but solar is also used to a lesser extent. Transportation on land primarily uses diesel vehicles that have off-road capabilities and can cope with gravel roads and difficult terrain; although private companies are beginning to import and explore the use of electric vehicles.

> ***Renewable energy*** *refers to the production of energy from sources that are not used up in the process. For example, solar energy, wind energy, wave energy.*

Currently, 30% of Stanley's energy is renewable and more than 90% of farms in Camp generate electricity from renewable sources. Transition to more renewable forms of heat energy continues to be incentivised through grant schemes administered by the Falkland Islands Development Corporation. However, we still rely on diesel generators for primary power to meet Stanley's energy needs and for back-up power in Camp. Back-up power and redundancies in the renewable energy systems at a national level are necessary for energy security. Because of our remote location, we generate all of our own energy. As a result, energy security is a key consideration and any energy sources need to be reliable to ensure that we can continue to power day-to-day life, including key services like the hospital, food storage, or communications. There are challenges in relation to being reliant on a single renewable energy source; around 20% of the year wind-speeds are either too low or too high to produce wind energy. Similarly, apart from every night, there are periods of time when solar energy production dips (e.g. during winter). These peaks and troughs in renewable energy production don't coincide with energy demand. Additionally, during periods of low demand excess renewable energy is currently not fully captured. This means expansion into renewables will require additional investment in storage technology.

From an extraction point of view, the Falkland Islands has offshore hydrocarbon resources, with significant potential for development and exploitation. The current legislative framework is being enhanced to reflect international best practice and to have a modern and robust environmental and safety regulatory regime. Mitigation and offsetting are also anticipated to be an important part of respecting the natural environment. Considerations around this, has led to the development of an Environment Trust to deliver offsetting projects, although such opportunities are in their infancy, and globally, offsetting schemes have a number of barriers to success.

We also extract other non-renewable resources on a small-scale, including small quarries for road building and maintenance, calcified seaweed for agricultural purposes, and traditional peat-cutting for heating and cooking (a cultural, but no longer wide-scale practice).

Issues and Opportunities:

- **Continuing to rely on and invest in non-renewable energy sources for power generation will mean that we continue to emit greenhouse gases, which although fairly small because of the size of our population, still contribute to climate change.** Burning of fossil fuels is also associated with emissions of air pollutants.
- **There is an opportunity for increased use of renewable energy sources, which are not currently exploited as far as they could be for heat and electricity generation.** Transitioning to renewable energy sources has additional benefits beyond reducing greenhouse gas

emissions, including enhanced energy security (reduced dependence on fuel imports) and less air pollution.

- **Energy demand will continue to increase** with growing population and economic growth. There are peaks and troughs in demand over short time-periods, necessitating consideration of energy storage and redundancies.
- **It's important to consider multiple renewable energy sources** in ensuring energy security for the Falkland Islands, to enable us to no longer rely on fossil fuels.
- **There are key challenges, some unique to the Falkland Islands, that will need to be overcome to achieving 100% renewable.** Getting reactive power from renewable energy is complex and requires additional technology that is becoming available but is not yet proven. The main reactive power demands are from sources such as quarry and refrigeration related to transport logistics (e.g. reefer containers).
- **The whole of life impacts and functionality for any energy source and installation need to be considered,** taking into the account long-term environmental impacts of construction, operation and waste. This should be planned for, mitigated and managed, all of which can be challenging due to the location and remoteness of the Islands.
- **Bearing in mind these challenges, the emphasis on energy efficiency and savings could be increased, in order to reduce energy usage.** For example, better use could be made of energy efficiency measures in new and existing buildings.
- **Not much use is currently made of green transportation options in the Falkland Islands**. Transitioning to green transportation options, e.g. electric vehicles will require understanding of consequences in terms of future electricity demands from the grid, new charging infrastructure and potential new waste streams generated by new technologies.
- **Many environmental protections are already in place for managing extraction of hydrocarbons;** however, careful consideration also needs to be given to decisions around extraction of non-renewable resources on land, and to managing and mitigating potential environmental impacts.
- **International trends, developments, and supply chain considerations, may dictate the cost, availability, and suitability of energy sources for the Falkland Islands.**

7.6.Waste and Pollution

Pollution to air, water and soil results from human activities such as: burning of fuels; production of waste water; discard of waste like plastics, cars and electronics; by-products of industry; or the use of chemicals and fertilisers. Pollution is a driver of environmental change and a global problem, not least because we share the earth's atmosphere and oceans. At a global level, pollution is an important cause of biodiversity loss through strong negative effects on soil, freshwater and marine quality, as well as the global atmosphere [9], [10], and it has serious impacts on human

> ***Pollution –*** *the direct or indirect introduction of substances, vibrations, heat or noise into air, water or land, as a result of human activity and which may be harmful to human health/the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment.*

health. However, appropriate pollution control and prevention technologies can minimise and mitigate the impact of pollution.

Because of our small, remote population and low level of industry, the level of waste and pollution that we generate is comparatively small – a trend we should seek to continue in future. However, our size and location also pose a number of specific challenges with respect to waste and pollution.

Global trends affect the Falkland Islands. Waste washes up on our shores, much of it not generated by us. We are reliant on external supply chains and on global market trends in terms of products and packaging. We have choices in terms of what we buy, but these can be limited, and not always straightforward. For example, less packaging may cut down waste, but could also mean reduced shelf-life or increased chance of spoilage or damage on a long journey, paradoxically leading to more waste. There can also be challenges related to the minimum quantities of waste needed to be shipped for recycling or appropriate means of disposal, and the significant carbon footprint and cost of shipping waste over large distances. The small population size and volumes of waste we generate make it uneconomical to recycle some types of waste locally. The increased use of smartphones, computers and electronic devices in day-to-day life generates e-waste (discarded electronic equipment that contains toxic elements), but we do not have the facilities to appropriately recycle this.

As technology continues to advance, the Falkland Islands population and economy grow, and new industries develop, we need to introduce additional ways to manage and control pollution, and there is ongoing policy and infrastructure development related to this [15]. To this end, there has been joint working between FIG and BFSAI on sustainability issues related to waste and pollution. BFSAI are an important part of the Falkland Islands community and are working collaboratively on recycling and waste management initiatives with FIG and looking for ways to build on the many benefits realised so far for people living and working within the Falkland Islands.

Issues and Opportunities:

- **While a number of controls and mechanisms are in place to manage pollution in our oceans, particularly offshore, controls on pollution on land are more limited.** This relates to managing all types of emissions across air, water and land.
- **Domestic and commercial waste could be better managed, including biological, chemical, sewerage and municipal solid waste**. Opportunities should be explored around increasing recycling, decreasing consumption, and better handling and disposing of hazardous waste, non-hazardous waste, and wastewater.
- **Opportunities may exist around the use, re-use and repurposing of waste**. For example, extracting energy from waste, recycling metal waste, or using food waste streams from industry for some other purpose.
- **We could all take more responsibility for what we consume.** Pollution and waste, as much as it is a national problem, is also one that is determined at the individual level, through our choices of what and how much we buy and discard. Although supply chains in the Falkland Islands may limit options, opportunities do exist to reduce waste through changes in consumption.
- **Hazardous waste and e-waste, a modern global issue, pose environmental and human health risks.** E-waste, generated from the disposal of electronics like mobile phones or the

batteries of hybrid cars, often contains toxic substances. The problem is only likely to grow in future as technology becomes more widespread. However, the rare elements in some of these electronics have a value when recycled.

7.7.Sustainable Development and Quality of Life

A sustainable economy and our wellbeing are underpinned by healthy, functioning ecosystems. Ecosystems play an indispensable role in cleaning our air and water, regulating climate, producing food, providing energy and key materials, genetic resources, pollination, pest control and medicines. They are essential for our quality of life, health, physical wellbeing, culture, and identity, and provide inspiration, learning, and recreation (see also Chapter 7.1). Our connection to the natural environment is perhaps more obvious in the Falkland Islands where we live close to our natural environment and have a resource-driven economy; our fisheries and agriculture are both dependent on the sustainable management of our natural environment and tourism is focused around wildlife.

The Falkland Islands enjoys a prosperous economy and good quality of life, where large quantities of natural resources and a small population have led to full employment, relatively high incomes and a good range of local government services. The fishing industry is the cornerstone of our economy, with agriculture and tourism making smaller contributions to income but being important employers. The public sector is also a key employer. Hydrocarbon exploration is ongoing, with the intention to progress to production should it prove feasible, and there is currently a small aquaculture sector and potential commercial interest in expanding this. In short, we have a resource-based economy. The fact that our industries depend heavily on the natural environment and are affected by changes in the environment also has significant implications for financial risk to the economy. Global climate change, and the increase in environmental uncertainty it brings, has the potential to further intensify this.

Overall, it has been recognised that we have a narrow economic base and that we will need to diversify and differentiate our economy in strategic ways to ensure long-term prosperity, by increasing economic resilience where international markets or natural environments change or fluctuate [5], [16]. The key challenge, then, will be in achieving this diversification and differentiation and managing our existing activities and development to allow a good quality of life, while not undermining our ecosystems and the services that they provide or the aspects of our community, heritage and way of life that we value.

Human activities and development can transform and degrade ecosystems and reduce their ability to function and continue to provide the ecosystem services that support human wellbeing. Interactions are complex. Economic activities impact local quality of life, often in both positive and negative ways that operate through the environment. For example, high levels of tourists bring economic advantages and may support increased transport links, but may also cause crowding out of local environmental areas, limiting public access to the natural environment. Economic development, at a global level, can bring advancement that provides more environmentally-friendly options for technology or methods and it is worth taking advantage of these, where possible, to lower the impact of these activities.

Our quality of life is also linked to culture, history, and heritage, and for the Falkland Islands these are closely tied to the environment. The natural environment is a strong part of our national identity and public consultation has shown that we value things like the sense of space, freedom and proximity to

wildlife. Human health also depends on the services that ecosystems provide and is linked to environmental health. This operates in various ways from the impacts of pollution to pathogens and pests, which are natural parts of ecosystems. For example, environmental degradation and climate change can alter the frequencies of pests and diseases. The natural environment is also important for our mental health and wellbeing, with studies increasingly showing that spending time in nature has a multitude of benefits for our physical and mental health [8].

Issues and Opportunities:

- **Economic activity and development need to be carried out within ecological boundaries.** Exceeding the limits of what the environment can support undermines the ability of ecosystems to continue to produce these goods and services. The overall integrity of our ecosystems and their functions underpin much of our economy, and the renewable resources that we rely on need to be sustainably managed to ensure long-term viability.
- **As the population of the Islands continues to grow and we continue to develop, our environmental impact and risks to the environment are likely to grow.** We need to understand and consider the environmental, social and economic trade-offs of this growth.
- **The potential impacts of development and human activities, which act through the environment, on quality of life and health should be considered**. For example, chemicals used in managing pests or invasive species, or even for enhancing agriculture, may have unintended consequences for human and environmental health.
- **The interactions between industries, the environment, and the economy are complex.** The impact of one industry on the environment can, in turn, impact another industry that relies on the ecosystem goods and services healthy ecosystems provide. Related to this is the issue of cumulative environmental impacts of economic activities and developments.
- **The challenge is in balancing environmental measures in existing and future economic activities to ensure that ecosystem integrity (and biodiversity) is not undermined** and that environments are appropriately protected and preserved while still allowing economic activity and growth that enables a good quality of life and the wellbeing of our community. It is important to appropriately evaluate, manage and mitigate the environmental impacts.
- **There is often a mismatch between the timescales at which ecological change and processes operate and typical financial cycles.** Whilst ecological processes frequently operate on long timescales and environmental changes are often incremental, financial decision-making tends to operate on a much shorter timescale.
- **The natural environment is variable by nature, and there is a high degree of uncertainty in estimating many environmental processes.** This has significant consequences for Falkland Islands industries, e.g. fishing, farming, tourism, that depend on, and are affected by, changes in the natural environment.
- **The Falkland Islands identity is tied closely to the environment;** however, there remains the challenge of balancing the preservation of cultural heritage, community attributes and way of life with environmental protections.
- **Opportunities exist around improving quality of life and health through increased use and enjoyment of the environment**, e.g. encouraging use of outdoor spaces and accessibility to natural areas like the Common or increased access to other areas. The natural environment plays an important part in our happiness, quality of life and health.

- **There is a lack of data to explore links between environment and human health in the Falkland Islands.**
- **At a global level food security and food safety are an issue**, with climate change, degradation of agricultural land and land conversion for biofuel or energy production being identified as threatening food security, especially in poorer countries. While we are rich in natural resources, we are heavily dependent on imports and supply chains, including many food stuffs, making us subject to international trends.

7.8.Science and Innovation

This section focuses on the importance of science to advance our understanding of the natural environment and the drivers of change. It also looks at using the information and data we have or collect, in ways that can inform our actions to manage the environment and support efforts to develop and adopt innovative technologies and approaches for sustainable development and improved environmental management. Science and technology are powerful agents of change and, depending on how they are directed, can achieve positive progress towards sustainable development [17].

There have been a number of ongoing science initiatives in the Falkland Islands for land, air and sea, both within government and across partners. Research undertaken by government, the South Atlantic Environmental Research Institute, Falklands Conservation, the British Antarctic Survey and other national and international partners benefits not just the Falklands, but also contributes to the global understanding of some of the major challenges facing the planet, most notably those related to climate change. There is the intention to build on our scientific capacity, and that of the region, and to find ways of adopting technologies and approaches to better understand and manage our natural environment. The Falkland Islands provides the international science community with a platform to monitor and observe climate change; not just in the Islands and our waters, but across Antarctica and South America. As well as acting as a scientific hub and research coordinator/leader in the South Atlantic, the Falkland Islands is a gateway to the Antarctic for science and research.

Innovation is about finding new and creative ways of solving existing problems or taking advantage of opportunities. The people of the Falkland Islands have a history of finding creative ways of solving local problems with limited resources. Globally, innovation, especially in the technological and data management sectors, is progressing rapidly and there are opportunities that can be explored for whether and how this could be applied locally to help protect, improve and monitor the environment. Innovative technologies and approaches could also help the Falkland Islands move to more sustainable practices and options (e.g. green energy and innovations around this, better systems of food production, economic development and new economies, new ways to deal with waste or re-use it). Internationally, more and more governments and companies are investing in sustainable technologies [17]. It's important to look at what works elsewhere and what doesn't, and how that can be applied in the very specific context of the Falkland Islands. This constitutes horizon-scanning, but also is about looking to the future and understanding how we can develop local practices and technologies to be prepared for global advances that are progressing at pace.

Useful and accessible information, including data, help to support science and innovation, as well as decision-making. For the size of the population and the resources of the Islands there has been a relative wealth of science and research; nevertheless, data are often limited in the Islands and information can be somewhat patchy. There has been some work on consolidating metadata and environmental records through the SAERI IMS-GIS centre. There is a broad need for improved information management across and beyond government, particularly for environmental data, where having more baseline information can help to identify early warning signals of environmental change and help provide an evidence base to inform decision-making. This goes beyond data management, and extends into understanding the records and information we have. Understanding what we have will enable us to make better decisions in terms of what we need to do and data we need to collect, and avoid doubling back on work and wasting resources that could be better spent elsewhere.

Indeed, there are global trends to build science-policy-society cooperation that can make use of developments in our understanding of human-environment systems and in creating innovative pathways towards sustainable development; many countries are strengthening science, technology and innovation aspects of their national development agendas [17].

Issues and Opportunities:

- **There is an opportunity for better management and sharing of research, knowledge and data across the Islands**. Currently, environmental data and information are generated across disparate sectors (government, industry, non-governmental organisations) and use different practices. They are not always easily accessible. This means that work is repeated, wasting resources, and valuable information that could improve decisions or actions is not utilised.
- **There is a need for better baseline environmental data and long-term monitoring, which can be important for understanding trends**. Early warning monitoring systems can help to spot slow, incremental degradation of the environment before changes become irreversible.
- **There is a need for the establishment and prioritisation of key performance indicators and associated data collection across the suite of themes discussed in this strategy.**
- **The way that science interacts with policy and decision-making needs to be improved**, such that the available science and evidence base informs direction and decision-making.
- **There could be more horizon-scanning and future-proofing, with the aim of understanding global trends and where they could be applied successfully to the Falkland Islands environment.** New technologies and practices may be beneficial for the environment, and bring advantages more broadly across our society. Our size means that while scale may make some initiatives unfeasible, we can be nimble and adaptive – adopting changes relatively quickly.
- **Innovation may provide new and useful solutions to existing problems, but not all change and innovation is automatically good or needed.** We will need to be critical about what would work in our local context and what the environmental (or other) consequences may be.
- **There can be resistance to change and new ideas – particularly where these are not tailored for the Falkland Islands context.** Change and innovation can be challenging and often requires careful communication and consideration about how changes are adopted.

- **Research and skills development will be needed to support science and innovation, including that which will be required to adapt to global changes and shift to a greener economy.** This is particularly relevant in pre-empting emerging technologies that will eventually be taken up on the Islands.

7.9.Communication and Education

Education and communication both have a prominent role to play in helping people to understand the environment and to engage in the process of delivering and supporting meaningful change. Education can provide a better awareness of a variety of ecological issues. Everyone in society, at any age, can increase their understanding of the environment and use this information to modify their behaviours and their interactions with ecosystems around them in a sustainable way.

In the Falkland Islands, we encourage an ethos of 'lifelong learning', combining traditional education pathways with modern learning opportunities. By supporting this ongoing, voluntary and self-motivated approach to personal development, there is a clear and obvious framework for improving environmental knowledge and understanding across the whole of the community. This in turn helps everyone to become aware of the solutions to environmental issues, and motivates people to tackle the problems and act to both preserve and conserve natural resources.

In addition to environmental education strategies, effective behavioural change can also be brought about when people lead by example and when there is direct and collaborative action, and this is where communication is absolutely vital. Environment is understood in a different manner by people based on their experience, education and the level of overall awareness in society – communication can bridge the gap between these three pillars. Environmental communication should cater for all generations and across the whole of the community and should support a range of environmental efforts – policies, strategies, programmes and projects – including changes in knowledge, approach and behaviours. It should cross-cut different realms, areas of study and socially responsible practices, from risk management to scientific research, from social media and marketing to political action. Every message generated should be able to transcend barriers between different segments of society, as well as organisational boundaries and silos. Environmental communication supports collective ownership and is an important tool for helping to achieve policy objectives.

Issues and Opportunities:

- **Knowledge, data and information related to the environment could be better communicated** in an accessible and consistent way and shared throughout the community so that people are well informed.
- **Environmental stewardship throughout the community and industry could be encouraged** through increased communication, education and programmes/initiatives. This includes encouraging corporate and social responsibility.
- **The Falkland Islands community could be further enabled to consider the environment in day-to-day activities and to implement more environmentally-friendly practices**, which would help to support policy and legislative implementation. Regulations alone do not achieve

environmental change; it requires an attitude shift as well as the mechanisms and tools in place to help people make changes.

- We need to **explore new capabilities**, including job skills, environmental careers, ways of learning, research efforts and management approaches to adapt to global change and make the most of opportunities in the Falkland Islands to work towards a greener economy.

8. STRATEGIC OBJECTIVES & ACTIONS

This section details our strategic objectives to help guide us in working towards our vision. It also provides an example of *some* of the actions we'll be taking during the life of the strategy. Further actions, and indeed many of the smaller steps involved in the actions already listed in this strategy will be developed, prioritised and implemented through the mechanisms explained in *the Strategy in Practice* (Chapter 6) to address issues and strategic objectives. The *Strategy in Practice* also deals with how conflicts between objectives or actions and prioritisation of limited resources will be handled.

8.1.Biodiversity and Ecosystem Integrity

- to continue working towards integrating biodiversity (i.e. considerations of ecosystem integrity) across environmental and economic agendas, acknowledging that the integrity of ecosystems underpins the continued provision of all ecosystem goods and services for current and future generations
- to protect and enhance our biodiversity (ecosystem integrity), reducing its loss through tackling threats
- to work towards preventing the introduction of invasive species, reducing their spread and reducing, eliminating or appropriately managing them
- to mitigate for degradation and promote restoration of native ecosystems, where possible
- to work towards understanding and managing creeping change (slow, incremental environmental degradation) before environmental thresholds are passed that have costlier and fewer solutions
- to increase knowledge of the marine, terrestrial and aquatic environments and biodiversity, through identifying and filling key knowledge gaps, to support effective governance and decision-making

Actions we plan to take include:

- update our biodiversity framework and action plans to accommodate upcoming changes to the international Convention on Biological Diversity
- update wildlife and nature legislation to increase protections for biodiversity
- implement more controls on invasive species
- Identify and prioritise data types and key geographic areas for data collection to increase our knowledge of marine, terrestrial and aquatic environments

8.2.Oceans and Coasts

- to have healthy, functioning and robust marine and coastal ecosystems in the Falkland Islands through protections and management

- to ensure that future generations can benefit from marine and coastal ecosystems and the goods and services they provide by sustainably managing human activities which impact our oceans and coasts

- to actively participate in the integrated, cross-boundary management of marine ecosystems in the South West Atlantic, that considers cumulative impacts and contributes to the good condition of marine and coastal ecosystems

Actions we plan to take include:

- establish marine managed areas with a target of 15% of our marine waters designated and with management plans
- continue working with countries in the broader region to share information and resources to facilitate better management of our marine environment
- conclude investigations of potential environmental impacts of aquaculture, including large-scale aquaculture
- implement the agreed recommendations from the fin-fish review (ExCo 16/21)
- investigate extension of appropriate international instruments to reduce introduction of marine invasive species

8.3.Land and Freshwater

- to manage and protect our native terrestrial and aquatic ecosystems (including wetlands) and the quality of land and water

- to improve terrestrial and aquatic ecosystem integrity, for the benefit of current and future generations, through considering the ecological impact of and improving land-management approaches, practices and incentivisation

- to take an integrated land-water management approach that adopts a long-term view and incorporates ecological considerations alongside social and economic ones

Actions we plan to take include:

- establish additional National Nature Reserves
- create an agricultural action plan and an agricultural advice framework, which will reflect the ecological principles in the Environment Strategy
- develop an action plan to manage land and water
- investigate the potential for peatland restoration and frameworks around restoration
- assess successes of previous restoration efforts to build better knowledge for future efforts
- develop a clear biosecurity policy
- increase community awareness of invasive species, how and why they should be managed

8.4.Climate Change

- to reduce our carbon emissions through transitioning to using renewable (low carbon) energy sources for power generation
- to consider and plan for the possible extent of the multiple effects of climate change for our ecosystems, society and economy and how these may interact with other human impacts
- to understand the potential of native ecosystems for mitigating and offsetting carbon emissions, e.g. peatlands, wetlands and marine ecosystems
- to consider the potential negative environmental effects of climate change mitigation and adaptation measures

Actions we plan to take include:

- produce a climate change adaptation and mitigation plan for the Falkland Islands
- assess the suite of potential risks of climate change for the Islands to inform policy
- increase our understanding of how climate change could impact our species and ecosystems, particularly those that also experience effects of commercial exploitation
- increase our understanding of climate change impacts on fisheries through scientific studies
- investigate carbon accounting for the Falkland Islands to understand our current net carbon emissions and to help us set targets around carbon neutrality

8.5.Energy and Non-renewable Resources

- to increase our use of renewable energy sources, with a focus on reliable and appropriate energy with low environmental impacts
- to promote energy efficiency and savings, slowing down and stabilising the consumption of energy while ensuring that the needs of people are met
- to consider whole of life impacts of measures intended to reduce energy use or of transitioning to renewable forms of energy
- to conduct the extraction of non-renewable resources, including any hydrocarbon development, in a way that values and conserves our unique biodiversity and ecology, supported by effective regulation

Actions we plan to take include:

- produce and implement a new Energy Strategy for the Falkland Islands
- increase our reliance on renewable energy, with Stanley's primary electrical supply being 100% renewable by 2050
- build on existing schemes to increase domestic insulation, thereby reducing their energy consumption
- trial alternative renewable technologies for Stanley's electricity supply, such as solar energy
- increase energy saving practices within FIG
- trial the use of electric vehicles

- promote and encourage investment in the Falkland Islands Environment Trust and support projects funded by that Trust

8.6.Waste and Pollution

- to improve pollution controls in the Falkland Islands, with a particular focus for onshore pollution controls
- to improve waste management in the Falkland Islands, including sewerage, hazardous and e-waste, to reduce impact on the environment
- to use resources efficiently, keeping them in use for as long as possible to reduce waste and its environmental impacts through the promotion of re-use, remanufacturing and recycling
- to promote changes in behaviour, including consumption patterns, to reduce waste and pollution

Actions we plan to take include:

- create a Waste Management Plan to implement for the Falkland Islands
- develop a policy framework and identify and implement appropriate tools (e.g. legislation) to control and prevent pollution
- create a protocol for dealing with terrestrial fuel spills
- decommission and replace current power station in order to reduce polluting emissions
- in partnership with BFSAI, create a waste management facility and a new landfill designed and built to high specifications by 2025 to minimise environmental impact
- reduce waste to landfill through ongoing recycling, repurposing and other waste management practices
- explore options for additional sewerage treatment to improve quality of effluent
- establish a list of hazardous substances and products typically disposed of in the Falkland Islands, including e-waste, batteries and agricultural chemicals, and identify options for appropriate disposal or recycling e.g. export supply chains
- work with industry and business to source more sustainable, lower waste product options and encourage them to explore viable options for tackling waste streams from existing economic activities
- investigate extension of appropriate international instruments to reduce marine pollution

8.7.Sustainable Development and Quality of Life

- to have development that is sustainable, within ecologically meaningful boundaries, so that the natural environments on which we ultimately depend are not undermined
- to manage and protect our heritage - natural, geological and cultural, our sense of wild places, open skies and small community spirit

- to consider, manage and minimise the impact of economic activities and development on the environment, taking a long-term strategic approach that considers future generations and incorporates environmental assessment

- to consider the strong links between natural environment and human health when making decisions and policies, recognising that an impact on environmental health frequently translates to an impact on human health

Actions we plan to take include:

- improve environmental assessment frameworks for land-based development
- continue to promote and improve environmental standards for new builds
- encourage the adoption of environmentally-friendly measures, e.g. energy savings, water savings and thermal efficiency, through educational advice provided with building permit applications
- explore management plans for tourist industry in environmentally sensitive areas
- explore concept of eco-certification for Falkland Islands tourist industry
- promoting high-value, low-environmental impact tourism
- further develop self-guided nature walks with partners to promote physical and mental well-being
- continue to implement the Stanley Common Management Plan and undertake ongoing policy development for the Common as appropriate to its importance as an open space for the public and National Nature Reserve

8.8.Science and Innovation

- to create a strong, well-managed and accessible science and evidence-base to help support decision-making with respect to the environment, including for helping to cope with and adapt to environmental change

- to help facilitate science, research and the development or implementation of new technologies, methods or approaches

- to have a strong and responsible culture of innovation across the Falkland Islands; engaging in horizon-scanning and investigating the potential environmental benefits and impacts of new technologies, industries and practices

- to continue to develop skills to enable innovation and research, e.g. STEM (Science, Technology, Engineering and Mathematics), for the Falkland Islands

- to future-proof technologies and approaches in the Falkland Islands, particularly in light of global shifts, e.g. environmental change, green economy

Actions we plan to take include:

- identify current practices and procedures around (environmental) data management
- identify and explore opportunities for managing and sharing of data and information with relevance to the environment across sectors, both public and private, promoting the benefits of managing and sharing such data.

- explore the possibility of collating long-term climate or weather data sets from variable data sets for the Falkland Islands and the broader region
- increase capability within government to dedicate to exploration of opportunities for development in science and innovation (e.g. strategic horizon-scanning)
- identify indicators for each different theme as appropriate and begin measuring/collecting data for this

8.9.Communication and Education

- to improve communication and sharing of knowledge, data and information related to the environment
- to promote sustainable behaviour and environmental stewardship throughout the community
- to embed environmental awareness in lifelong learning, including education on the Falkland Islands' natural environment and the relationship between environment, society and economy
- to promote skills development to support the global shift towards a green economy and enable the local community to adapt to respond to environmental issues, e.g. global change, and opportunities in the Falkland Islands

Actions we plan to take include:

- incorporate more information about the Falkland Islands' natural environment into education programmes
- information campaigns and other outreach initiatives/programmes to encourage positive changes in consumer attitudes (e.g. reducing plastics use) and increase environmental awareness (e.g. invasive species awareness, growing of native species of plants, energy saving behaviours)
- work together with the private sector on projects or initiatives that could benefit the environment, in-line with the actions and objectives set out throughout the strategy


Tussac, credit: Emma Jaffray

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ANNEX 1: STRATEGY DEVELOPMENT PROCESS

The Islands Plan 2018-2022 contains a commitment to develop and implement a comprehensive environment strategy. ExCo paper 21/21 provides further details on the purpose of the Environment Strategy, which is: to address a broad range of environmental issues and be used as a vision to guide priorities, policy creation and work for the Falkland Islands in the long-term.

The final strategy has been developed using a robust, multi-stage process involving a wide group of representatives across a range of key groups. This process was primarily led by the Environment Department, with input at each stage from across government.

Direct involvement from across government was important to ensure a coherent approach and successfully integrate the strategy across all relevant policy areas. Early work on the strategy included input from various government directorates and stakeholders. A cross-departmental workshop identified key issues and themes. Following this, a formal internal stock-take process took place across FIG to capture the suite of relevant work that has already been completed, is underway, or is planned. This provided a comprehensive picture of work to date, as well as allowing for gaps to be identified. Individual directorates provided details of relevant legislation, policy, programmes, activities, projects, guidance, conservation measures and accreditation. As part of this process over 170 relevant documents were identified and recorded. Key policy interactions are identified in Figure 4, below). The strategy has been developed as a framework which sits alongside, and brings together, these existing and planned high-level policy documents across government which have environmental implications. Figure 4 gives a useful indication of broad areas where directorates' responsibilities will overlap with the implementation of the Environment Strategy – but it should be noted that it is not an exhaustive list of overlapping areas and will change over time. This analysis was used to ensure that objectives are aligned across policy areas as far as possible, understand potential policy interactions, and inform the identification of key issues and opportunities.

Public consultation and stakeholder engagement were central to the strategy development process, and were carried out in a number of different ways. Eleven in-depth, thematic workshops were carried out with stakeholder groups, including environmental organisations, industry bodies, business groups, children and young people. Three open public workshops were held, in Fox Bay, Goose Green, and Stanley. A public survey ran during February and March 2021 to gather views on the environment, test broad attitudes early on, and learn what is most important to the people who live in the Falkland Islands. A detailed workshop was carried out at an early stage with Members of the Legislative Assembly, focusing on issue and opportunity identification, as well as understanding their vision for the future of the Falkland Islands' environment to inform goal creation. An external stock-take exercise was completed, mirroring FIG's internal stock-take process, to provide further context. This information will also be used in the development of more detailed actions and plans, as strategy implementation progresses.

The views and ideas from each workshop were captured and thoroughly analysed. The topics raised at each session were categorised and counted across stakeholder groups to give an indication of the key themes arising. A similar process was carried out for survey responses, which were analysed closely to gauge the concerns, considerations and opinions of residents of the Falkland Islands.

This analysis led to a final longlist of all issues and opportunities raised throughout the stakeholder engagement process. Further details and an analysis of the responses received from the survey and workshops can be found in the stakeholder engagement report (2021), also available on the FIG website. Within the strategy itself, themes from the issues and opportunities raised throughout the public consultation and stakeholder engagement process are reflected under each topic. (More general comments relating to topics such as the structure, process, resourcing and governance of the strategy itself were also received. These have been considered and incorporated into the design of the strategy, plans for implementation, and next steps.)

Additional issues identified from an analysis of international literature were also added at this stage. To benchmark against international best practice and identify issues of global significance the following types of documents were reviewed:

- Comparable environment strategies from a range of other jurisdictions, including both small island states with a similar profile to the Falkland Islands and larger countries
- Multilateral Environmental Agreements (MEAs) applicable to the Falkland Islands
- Relevant global documents, objectives and indicators, such as the UN Sustainable Development Goals and the UN Environment Programme's '21 Issues for the 21st century'
- Relevant international scientific and environmental publications

Trends, issues, potential solutions, and policy options identified from this review have been incorporated into the relevant sections of the strategy.

Following on from this, initial draft versions of the strategy were shared within FIG, and detailed workshops were conducted with FIG directorates (where their remits overlap with key elements of the strategy), senior decision-makers with government, and MLAs. The purpose of these sessions was to:

- Bring subject experts and decision-makers together to review relevant sections of the draft strategy and provide feedback;
- Ensure that the most up-to-date and relevant information was captured and included within the draft;
- Consider the list of issues and opportunities developed, spot and address any gaps, provide supporting evidence where available, and prioritise urgent areas for action;
- Discuss strategic objectives and actions and how these could be realised in the long-term across government.

Following this, the draft strategy was taken to the Environment Committee, and the public asked for comment.

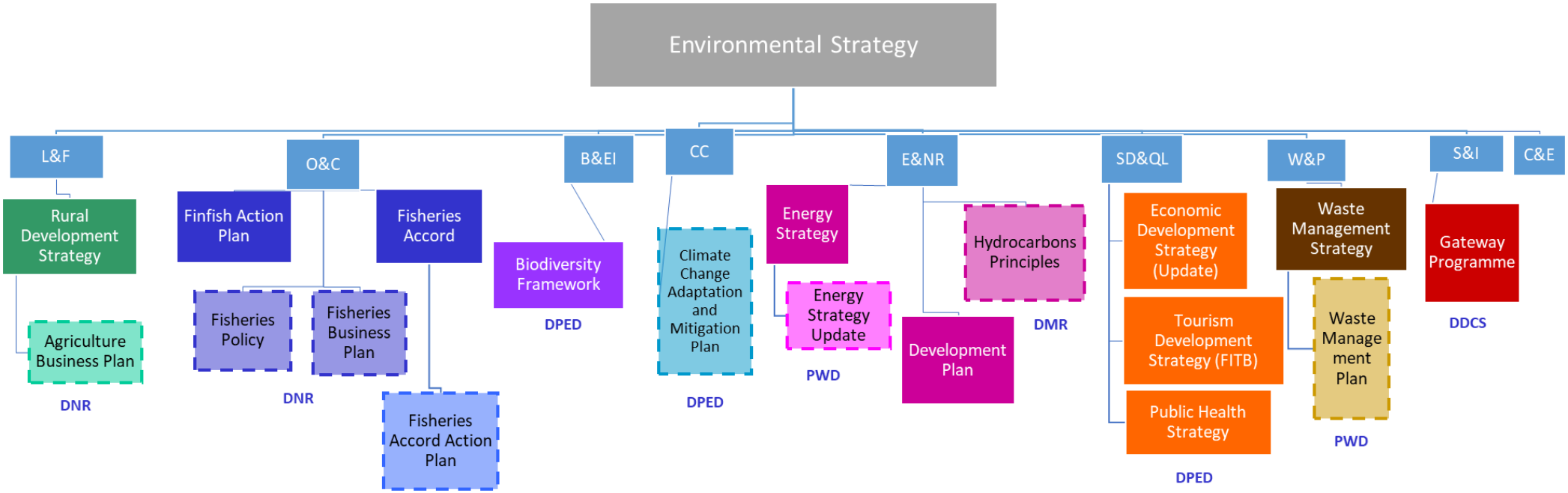

Figure 4: Some of the key interactions of the Environment Strategy with high-level policy that already exists or is in development at FIG. This is *not* a list of workstreams or plans emerging from the stategy. Please note that this grid is for illustrative purposes only and is based on the main topic covered in each document. There are many overlaps and linkages between policy areas which, for simplicity, are not shown here. Documents still to be developed are represented by a dotted outline. FIG Directorates are Natural Resources (DNR), Policy and Economic Development (DPED), Public Works (PWD) and Development and Commercial Services (DDCS).

L&F = Land & Freshwater

O&C = Oceans & Coasts

B&EI = Biodiversity & Ecosystem Integrity

CC = Climate Change

E&NR = Energy & Non-renewable Resources

SD&QL = Sustainable Development & Quality of Life

W&P = Waste & Pollution

S&I = Science & Innovation

C&E = Communication & Education

ANNEX 2 MULTILATERAL ENVIRONMENTAL AGREEMENTS THAT THE FALKLAND ISLANDS IS SIGNED UP TO

Table A2.1. Relevant multilateral agreements and the date of extension to the Falkland Islands.

International Convention on International Trade in Endangered Species of Wild Flora and Fauna - CITES (1976)
International Convention for the Prevention of Pollution from Ships – MARPOL (1995) • Protocol relating to the international convention for the prevention of pollution from ships – Annexes I, II, III & V (1995)
Convention on Fishing and Conservation of the Living Resources of the High Seas (1960)
International Convention on Oil Pollution Preparedness, Response and Co-operation – OPRC (2021)
International Convention relating to Intervention on the High Seas in the cases of Oil Pollution Casualties (1982) • Protocol relating to Intervention on the High Seas in cases of Oil Pollution by Substances other than Oil (1983)
International Convention on Civil Liability for Oil Pollution Damage – CLC Convention (1976 *Denounced 1998*) • Protocol to the International Convention on Civil Liability for Oil Pollution Damage on 29 November 1969 (*Denounced 1998*) • Protocol to Amend the International Convention on Civil Liability for Oil pollution Damage on 29 November 1969 (1996)
International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1978 *Denounced 1998***)** • Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage of the 18 December 1971 (*Denounced 1998*) • Protocol to Amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage of 18 December 1971 (1996)
International Convention on the Regulation of Whaling (1947)
Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter; London Convention (1972) • 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (*Entry into Force* 2006)
Agreement of the Importation of Educational, Scientific and Cultural Materials; Florence Agreement (1954) • Protocol to the Agreement of 22 November 1950 on the Importation of Educational, Scientific and Cultural Materials (1989)

United Nations Convention on the Law of the Sea (1997) • Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10.12.1982 (1997) • Agreement relating to the implementation of the previous United Nations Convention on the Law of the Sea (1982) relating to the Conservation and Management of Straddling Fish Stock and Highly Migratory Fish Stocks (2001)
The Convention on the Conservation of Antarctic Marine Living Resources; CCAMLR (1982)
The Convention for the Conservation of Antarctic Seals (1974)
Food and Agriculture Organisation Committee of Fisheries: Code of Conduct for Responsible Fisheries (1995) • Constitution on the Food and Agriculture Organisation (1945)
Convention on Wetlands of International Importance, especially as Waterfowl Habitat – RAMSAR Convention (1976) • Protocol to amend the Convention on Wetlands of International Importance of 2 February 1971 as Waterfowl Habitat (1984) • Amendments to Articles 6 & 7 of the Convention on Wetlands of International Importance (02.02.1971) Especially as Waterfowl Habitat (1990)
Convention on the Conservation of Migratory Species of Wild Animals – CMS (1985) • Agreement on the Conservation of Albatross and Petrels – ACAP (2004) • Memorandum of Understanding on Sharks (2012)
Vienna Convention for the Protection of the Ozone Layer (1987) • Montreal Protocol on Substances that Deplete the Ozone Layer (1988)
Convention on Biological Diversity (2016)
United Nations Framework Convention on Climate Change (2007) • Kyoto Protocol to the United Nations Framework Convention on Climate Change (2007) • Doha Amendment to the Kyoto Protocol to the United Nations Framework Convention on Climate Change (2020)
Convention for the Protection of World Cultural and Natural Heritage (1984)
Protocol on Environmental Protection to the Antarctic Treaty; Antarctic-Environmental Protocol or Madrid Protocol (1995)