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Integrated Marine Management in the United Kingdom Overseas Territories

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Like many small island communities, the United Kingdom Overseas Territories (UKOTs) are directly dependent on their marine resources for a range of ecosystem services, such as income generation, subsistence, leisure, recreation and wellbeing. Healthy marine ecosystems also play a broader role in climate regulation, coastal resilience and habitat provision. With Blue Belt Programme assistance, the UKOTs are developing enhanced protection and sustainable management strategies for their marine environments, using an Integrated Marine Management (IMM) approach. This coordinates cross-sectoral planning and management to carefully balance marine conservation and sustainable use of resources in order to minimize socio-cultural and economic impacts to the local community. We describe the IMM approach taken in two UKOT case studies. In Ascension Island, a conservation planning and resource management process was initiated with an objective to protect at least 50% of Ascension's waters from commercial fishing, resulting in the designation of one of the largest Marine Protected Areas (MPAs) in the Southern Atlantic. In St Helena, a new licensing framework for marine developments was developed within an existing sustainable use MPA. From these two approaches, we highlight aspects of the process, lessons learned and recommendations that may be useful for other small islands planning to implement IMM, particularly regarding the importance of effective stakeholder engagement, coordination across different governance scales, and long-term financial resources.

Keywords: Integrated Marine Management, UK Overseas Territories, Marine Protected Area, sustainable resource use, marine spatial planning

INTRODUCTION

Evidence shows that sectoral, "siloed," approaches to marine management cannot address the complex interrelationships between natural, biological, and socio-economic systems, as they do not consider cumulative impacts (Halpern et al., 2008) and can create conflicting objectives and values (Smith et al., 2017; Kelly et al., 2019; Winther et al., 2020) that perpetuate unsustainable resource use practices.

Integrated Marine Management (IMM)[1] is a broad, overarching approach that coordinates planning and management across sectors to better understand and address the range of pressures on the ecosystem by rationalizing management of marine uses for long-term ocean health (Stephenson et al., 2019). IMM should consider multiple activities, combine social, cultural and economic objectives, and apply the principles of ecosystem-based management (i.e., the ecosystem approach) (for example, see Long et al., 2015; Rodriguez, 2017; Smith et al., 2017). In doing so, IMM must bring decision-makers and stakeholders together from across multiple sectors to ensure that the cumulative impacts of human activities and the links between environment and society are understood and holistically managed (Atkins et al., 2011; de Jonge et al., 2012; Elliott, 2013; Elliott et al., 2017).

In many contexts, IMM involves some form of spatial zoning, such as Integrated Coastal Zone Management (Clark, 1997) and Marine Spatial Planning (MSP; Gilliland and Laffoley, 2008; Ehler and Douvere, 2009). Unlike management processes that are focused toward a particular marine sector (e.g., fisheries management) or specific outcomes (e.g., biodiversity conservation), IMM processes seek to balance multiple sectors and objectives. As a first step toward IMM, MSP is a widely adopted tool where heavy resource use requires a rationalization of marine use by space and time (Carneiro, 2013). For example, an IMM approach is applied in the United Kingdom and Canada through marine planning (a form of MSP), which is designed to better integrate existing marine policies (spatial and non-spatial) and streamline decision-making toward sustainable development (Gunton and Rutherford, 2010; Scarff et al., 2015).

Within the IMM toolkit, these frameworks advocate for a more holistic, integrated and cross-sectoral approach to management, but emphasize different elements (e.g., conflict resolution and streamlined decision-making) or spatial scale (e.g., land-sea interface and ocean basin). Therefore, IMM does not replace sector-based management but aims to integrate and enhance cooperation between the different sector authorities (Rodriguez, 2017). For example, within their marine planning systems, both the United Kingdom and Canada implemented a conservation planning process of establishing a network of Marine Protected Areas (MPAs; Gunton and Rutherford, 2010; Scarff et al., 2015).

In small island contexts, while there are generally fewer marine resource uses than in mainland situations, communities are often more directly dependent upon their marine environments for income generation, subsistence, leisure, recreation (Glaser et al., 2018) and cultural heritage (Abecasis et al., 2013a). However, their large marine areas typically boast disproportionately high levels of biodiversity and natural capital. As such, an IMM approach to balancing these socio-economic, cultural, and environmental objectives is just as valuable for small islands, despite them often having limited data, human capacity and available funds.

Stephenson et al. (2019) identify nine key features of successful IMM (**Figure 1**). Using this framework, we demonstrate how IMM has been applied to the United Kingdom Overseas Territories (UKOTs) of Ascension Island and St Helena. We highlight the process used, distil lessons learned and offer recommendations to inform implementation of IMM in other small islands.

[1] Also referred to as Integrated Ocean Management (Foster et al., 2005).

CONTEXT

The United Kingdom Overseas Territories and the Blue Belt Programme

The Blue Belt Programme is a United Kingdom Government initiative that assists the UKOTs with the protection and sustainable management of their exceptionally rich and varied marine environments. It provides a combination of scientific and management expertise by delivery partners – the Marine Management Organisation (MMO) and the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) – and direct funding to UKOT governments.

Recognizing the Need for an Integrated Approach

The UKOTs are dependent on their marine resources for a range of ecosystem services, including income generation, subsistence, recreation, and wellbeing. Healthy marine ecosystems also play a broader role in climate regulation, coastal resilience and habitat provision. Human activities like fishing, tourism and aggregate extraction may have environmental impacts that undermine ecosystem health. Although each UKOT has unique issues and priorities, the need to balance conservation, cultural and socio-economic priorities is a common theme. As such, the Blue Belt Programme supported an IMM approach to coordinate decision-making and establish management measures across the range of marine activities, allowing UKOTs to adopt bespoke planning processes once they had defined and agreed their specific objectives.

Saint Helena and Ascension Island - two remote, volcanic islands located in the central South Atlantic Ocean, 1,300 km apart - form part of the UKOT of St Helena, Ascension and Tristan da Cunha (**Figure 2**). When the Blue Belt Programme began in 2016, delivery partners conducted a comprehensive review of scientific data collected by UKOT governments, non-governmental organizations (NGOs) and research institutions (e.g., Brown, 2014; Weber et al., 2014, 2018; Brickle et al., 2017; Nolan et al., 2017; Wirtz et al., 2017; Richardson et al., 2018; Brown et al., 2019; Perry et al., 2020) and an assessment of existing management frameworks. Key evidence gaps were addressed through a targeted science survey program to inform development of the IMM process in collaboration with the UKOT governments.

Ascension Island

Ascension Island has no indigenous population and its approximately 800 inhabitants must be employed by the Ascension Island Government (AIG), United Kingdom or United States military bases, or companies based on the

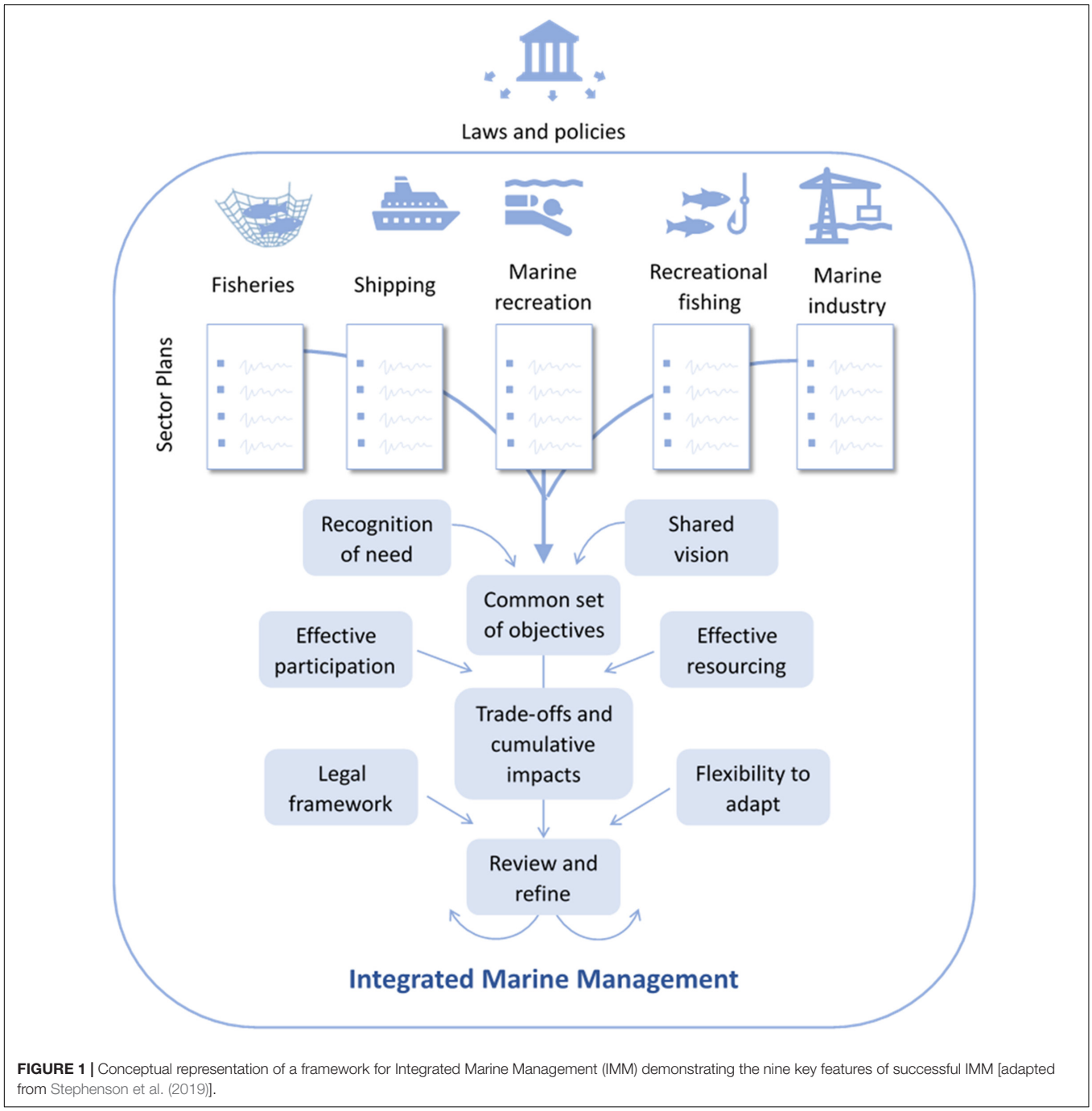

FIGURE 1 | Conceptual representation of a framework for Integrated Marine Management (IMM) demonstrating the nine key features of successful IMM [adapted from Stephenson et al. (2019)].

island. Although the population fluctuates as a result, many St Helenians have worked there for decades, and there is a strong cultural link and socio-economic exchange between the two islands.

Commercial fishing has been an income source for Ascension since foreign vessels were licensed to fish in 1988 (Reeves and Laptikhovsky, 2014; Mann et al., 2018). Recreational fishing is very important for the working community (Canelas et al., 2019), but islanders also supplement their diet with seafood and export fish to family on St Helena. When Ascension's airport was accessible, sports fishing attracted tourists, supporting up to three commercial operators. Cruise ships and smaller private yachts bring tourists for high quality recreational diving and oceanic voyages.

Although several important marine species were protected at the start of the Blue Belt Programme, there was almost no area-based protection for Ascension's marine habitats, even though their good condition was demonstrated to be important for existing and future resource use (La Bianca et al., 2018; Barnes et al., 2019; Millington and Smith, 2019). Scientific

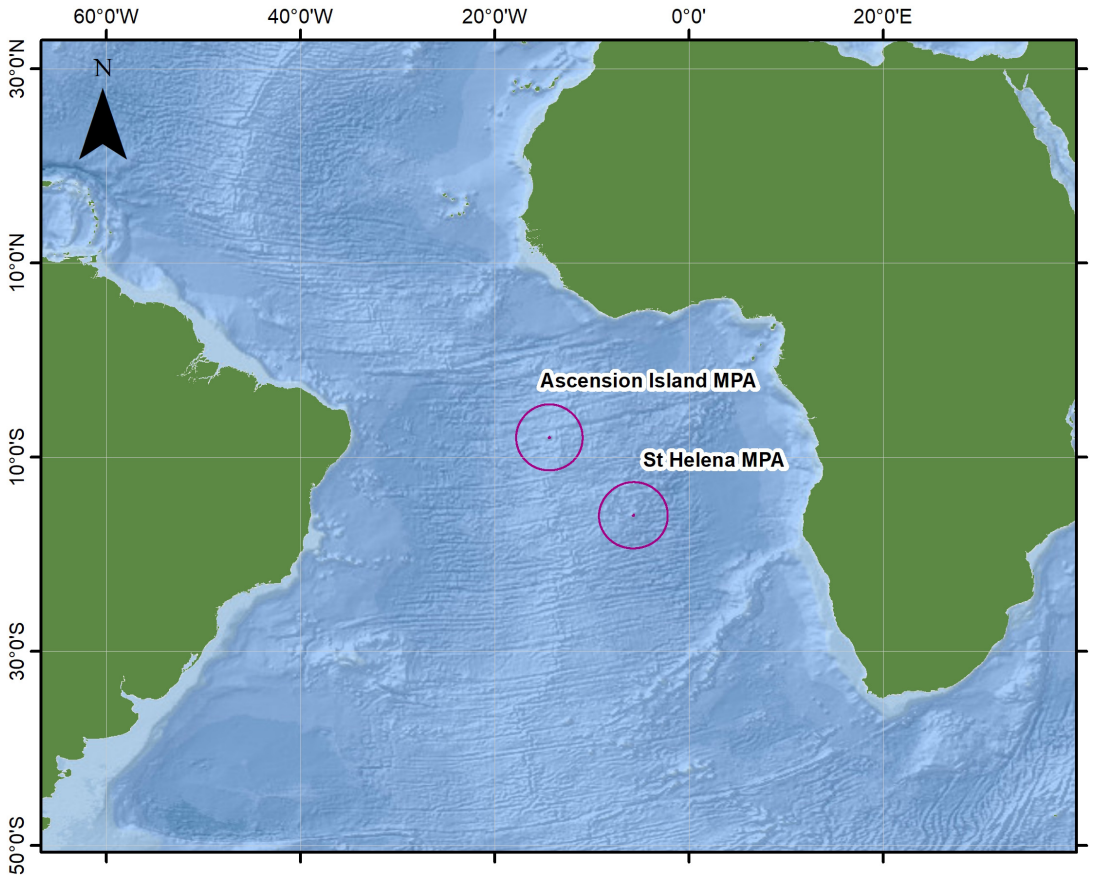

FIGURE 2 | The location of St Helena Marine Protected Area (MPA) and Ascension Island MPA in the South Atlantic Ocean. The purple circles indicate the extent of each island's Exclusive Economic Zone. Basemap bathymetry from Esri (2020).

research identified high levels of inshore biodiversity (Brickle et al., 2017) and showed the southern seamounts are important for pelagic sharks and fish (Weber et al., 2018). Assessments of the commercial longline fishery since 2010 (Mann et al., 2018) raised concerns about monitoring and enforcement capacity, bycatch of important species and impacts on tuna stocks [yellowfin tuna show some site fidelity within Ascension's waters (Richardson et al., 2018)]. These findings led to a specific Blue Belt Programme commitment to designate an MPA prohibiting large-scale commercial fishing across at least 50% of Ascension's Exclusive Economic Zone (EEZ).

Saint Helena

Saint Helena's population of approximately 4,500 people is dependent on its marine environment, which provides a range of ecosystem services, in particular fisheries, recreation, and tourism (Rees et al., 2016; Smith et al., 2019). Recognizing its unique marine ecosystem and exceptional biodiversity and the importance of the marine environment to the local community, in September 2016 the St Helena Government (SHG) designated its entire EEZ (approximately 440,000 km^2) as an International Union for Conservation of Nature (IUCN) Category VI MPA (protected area with sustainable use of natural resources) and developed the St Helena Marine Management Plan (St Helena Government, 2016a).

Sustainable management of fisheries within the MPA is achieved through the Fisheries Ordinance, 2021 (St Helena Government, 2021b) and impacts from tourism are being addressed through the Marine Tourism Policy for St Helena (St Helena Government, 2020). The Marine Management Plan, however, identified sand extraction as a potential threat to the marine environment due to limited regulation and uncertainty about its impacts. Sand is used in local construction businesses and extraction levels were also predicted to increase to support planned tourism development after construction of the airport. The Marine Management Plan identified that a licensing system should be developed to regulate both current and future sand extraction within the MPA. A Blue Belt Programme review of the associated management frameworks on St Helena, however, highlighted that although there was legislation to control development and protect biodiversity, there was no provision to regulate sand extraction operations or other potential activities such as dredging, construction works or laying of submarine cables or pipelines. Rather than creating sector-by-sector plans, it was recognized that an IMM approach, establishing a marine licensing process to regulate all marine developments

within the MPA, would be more appropriate to ensure wider ecosystem health.

INTEGRATED MARINE MANAGEMENT IN THE UNITED KINGDOM OVERSEAS TERRITORIES

A Shared Vision for Integrated Marine Management and a Comprehensive Set of Objectives Integrated Across Sectors/Activities

To fulfill Blue Belt Programme commitments, the IMM objectives on Ascension included an MPA planning and management component with sustainable small-scale recreational fishing in the inshore area. While the focus was specifically on prohibiting large-scale offshore commercial fisheries, early discussions between AIG, stakeholders and partners agreed the need to prohibit commercial extractive sectors (mineral and aggregate extraction) and to establish broader ecological, socio-economic and cultural objectives for the MPA. These strategic objectives shaped the Ascension Island MPA Management Plan, which also articulates operational objectives such as equitable access to shared fishing opportunities, effective governance, and stakeholder engagement in decision-making (AIG, 2021).

The St Helena Marine Management Plan recognizes that the local community is dependent on its marine environment. As such, there is an aspiration to develop the island's blue economy. The "Policy for managing development activities within St Helena's Marine Environment" (St Helena Government, 2021a)" ("Marine Developments Policy" henceforth) was developed with Blue Belt Programme assistance under the Environmental Protection Ordinance, 2016 (St Helena Government, 2016b) to effectively regulate marine developments (construction, engineering, mining, or other operations) in the MPA. Only proposals for marine developments that are compatible with the MPA's goals and objectives are supported under the policy. Developments must therefore have minimal practicable impact on marine biodiversity, habitats and ecosystems, and use natural resources sustainably. They must also bring positive socio-economic benefits to the local community and must not have adverse impacts on other human activities within the MPA.

Appropriate Legal and Institutional Frameworks for Coordinated Integrated Marine Management Decision-Making

Unlike several UKOTs, AIG places responsibility for conservation and fisheries management within a single department, creating a natural integration between the two sectors of greatest potential conflict. Prior to joining the Blue Belt Programme, Ascension's legislation was somewhat fragmented, with significant gaps in fisheries legislation, a mismatch in the spatial coverage between legislation for marine wildlife and habitats, and national protected areas legislation only covering the terrestrial environment and territorial waters (12 nm from shore). To create a more coherent legal framework, Ascension's protected areas legislation was revised, thereby introducing regulatory and management powers for designated MPAs throughout the EEZ. Revisions also provided for an overarching MPA Management Plan with legal status, setting policies and management actions across all resource uses. Amendments to existing legislation applying to fisheries, mining, and other environmental impacts (such as pollution) were then designed to complement the Management Plan.

In St Helena, the Marine Developments Policy was designed to address the recognized gaps by specifically considering potential marine impacts from proposed developments. The associated licensing process for marine developments has been designed to integrate within the terrestrial planning policy and legislative framework to allow effective coordination between the Planning and Building Control and the Environmental Management Divisions within the Environment, Natural Resources and Planning (ENRP) Directorate of SHG. This will ensure that activities in the terrestrial and marine environments can be managed in a coherent manner, recognizing the interconnection of the two systems, especially on a small island. Together with the fisheries legislation and Marine Tourism Policy, this fully implements the Marine Management Plan and minimizes identified threats to the marine environment. Before acquiring a marine development license, development permission under the Land Planning and Development Control Ordinance, 2013 (St Helena Government, 2013). will be required. If there is a risk that the proposed development may have significant effects on the environment, then an Environmental Impact Assessment (EIA) will be required to assess expected impacts. The marine development licensing process will then enable conditions to be attached to a marine license to minimize impacts to the marine environment and prevent conflicts with other sea users. Under new regulations, operating without a marine development license or failure to comply with any of the license conditions will be an offense.

Sufficient and Effective Process for Stakeholder Consultation, Engagement, and Participation

To fulfill the Blue Belt Programme commitment, two distinct but integrated engagement processes were needed on Ascension: (1) MPA design and implementation; and (2) management of inshore recreational fisheries within the proposed MPA (a contentious issue for many). For the first, an MPA working group was tasked with developing MPA design options, led by AIG and involving Blue Belt Programme representatives and affiliated academic institutions. To capture the wider views of islanders, SHG, private sector, recreational inshore fishers, and NGOs, design options were published for public consultation (AIG, 2018) before review by the Ascension Island Council and the Governor as ultimate decision-makers. Early public engagement with islanders highlighted the importance of establishing a participatory decision-making process to agree management measures for the inshore area, where most activities take place, involving the islanders themselves. The Inshore Fisheries

Advisory Committee (IFAC) was tasked with developing and consulting upon a proposed mechanism and suggested management measures. By providing stakeholders with clarity on how and when to engage with both processes, the MPA design received support for adoption. The development of inshore management regulations within the MPA continued in parallel.

Within the St Helena MPA, the most significant current stakeholders are the sand extraction operators. Their opinion was sought early on to better understand their current operations, future aspirations and local ecological knowledge of the seabed within the extraction area. Although initially there were some concerns, this engagement ensured the licensing process was appropriate to the local situation and acceptable to operators in terms of cost and reporting requirements, while still providing sufficient detail to ensure sustainable management. The Marine Developments Policy was drafted as a collaboration between SHG Divisions responsible for land planning, environmental management, marine conservation, and fisheries. Consultation on the draft policy included a wider range of stakeholders including other marine resource users, NGOs and the local community to improve understanding of the issues, identify any contentious issues and allow any conflicts to be resolved. Feedback was provided to all stakeholders who responded to the consultation, explaining how their comments were taken into consideration.

Explicit Consideration of Trade-Offs and Cumulative Impacts

Although there were concerns about the sustainability of large-scale commercial fishing of tuna around Ascension (as noted above; Mann et al., 2018), the sale of fishing licenses to foreign vessels represented an important income source for the island. As part of the IMM process, two scenarios were investigated to consider the current and longer-term financial returns compared with the economic costs and environmental impacts (AIG, 2018). Scenario 1 involved a large-scale MPA and retained the existing offshore commercial fishery in 50% of the EEZ, while Scenario 2 closed the fishery entirely and created an MPA across 100% of the EEZ. Each scenario outlined the environmental benefits of prohibiting or restricting existing and potential future activities and recommended an appropriate management regime according to the likely threats and enforcement needs. These scenarios enabled a comparative analysis of management costs (e.g., satellite surveillance; patrols) against projected revenue benefits (e.g., from commercial fishing licenses; recreational sports fishing).

This cost-benefit exercise highlighted that in addition to commercial tuna fishing, the biodiversity-rich inshore habitats were likely to be subject to cumulative impacts from illegal fishing, sports and recreational fishing (if poorly managed), and coastal pollution. For marine managers, attention was drawn to the need for specific management measures to protect valuable inshore biodiversity. For Island Council decision-makers, the scenarios revealed that economic gains from any licensed fishery would be offset by the need for expensive at-sea surveillance, monitoring and enforcement. Critically, an MPA covering 100% of the EEZ (that could be remotely monitored by satellite) would be cheaper to manage long-term because future fishing license revenues were predicted to decline due to changing tuna population distributions and economic markets, making the cost of enforcement patrols outweigh any benefits (Thomas et al., 2018; Muench et al., 2021; in this Research Topic). By using modeling of long-term fishery trends to help understand costs and benefits, this trade-off exercise supported the Island Council's decision to designate 100% of Ascension's EEZ as an MPA.

Under St Helena's Marine Developments Policy, sand extraction is the only activity currently undertaken that requires a marine development license. The paucity of information on the impacts of sand extraction on the marine environment in St Helena prompted the creation of a risk-based approach to inform the marine development licensing process (Mynott et al., 2021). An environmental risk assessment developed through the Blue Belt Programme concluded that at current extraction levels, the risk to the marine environment is low and existing operators continuing extraction at current scales do not need to undertake an EIA, but are required to report the quantities of sand extracted and comply with any other license conditions to minimize environmental impacts. However, applying the precautionary principle means that any applications to expand operations or move to a new area within the MPA will trigger an EIA requirement in the absence of sufficient data for a meaningful risk assessment. Additionally, when deciding to grant a marine development license, SHG will take into consideration any anticipated negative impacts to marine habitats and species, water quality, protected archeological and heritage features, and other MPA uses. Practical measures to avoid, minimize and mitigate significant negative environmental impacts and maximize positive impacts will also be assessed, as well as potential benefits to St Helena's economy and residents. A simplified cumulative impact assessment will identify other activities within the proposed development location whose pressures might impact the same receptors, considering the temporal boundaries, based on the project life cycle and the recovery of the potentially affected receptors, before assessing potential impacts from all relevant activities.

Flexibility to Adapt to Changing Situations and a Process for Ongoing Review, Evaluation, and Refinement

Management of the Ascension MPA (AIG, 2021) has been designed to follow an adaptive management cycle with annual reviews of progress against targets and a full review every 5 years. The Plan contains operational objectives to prevent negative change in habitat and species abundance, and to engage the community effectively in MPA governance. Complementing the Management Plan is the Monitoring, Evaluation, and Research Strategy (AIG, 2020a), which defines the metrics and indicators to monitor change and the process of evaluating governance frameworks and management actions, using internationally-recognized protected area management effectiveness methods. Additionally, there are plans to implement a public engagement

strategy and establish an MPA Steering Group, Youth Committee and Scientific Advisory Committee, involving AIG, local community members, stakeholders and experts.

Under the St Helena Marine Developments Policy, any marine development license will include requirements for an associated monitoring regime as a license condition to improve understanding of the impacts on the marine environment and to mitigate and monitor any adverse environmental effects. Monitoring activities will be proportionate and tailored to reflect the nature and scale of the marine development and potential impacts identified. An effective monitoring regime will support adaptive management and allow flexibility to adapt to changing conditions. This will take place through regular reviews of marine development licenses (frequency dependent on the licensable activity and available evidence) to ensure that the license conditions are fit for purpose and that the process is achieving the policy's environmental, cultural and socio-economic objectives. Conditions could be strengthened, relaxed or removed as appropriate, dependent on the outcome of the review.

Effective Resourcing, Capacity, Leadership, and Tools

Both AIG and SHG have demonstrated strong leadership and implemented coordinated work programs to deliver IMM, despite the recognized constraints of capacity and resources on such small, remote islands. The Blue Belt Programme provided marine management assistance, scientific expertise, capacity building, and additional capital expenditure to fill identified gaps. Associated academic institutions and NGOs continue to provide valuable knowledge, support, and technical assistance.

Views on long-term resourcing have presented challenges for the Ascension process, which experienced delays at designation due to concerns that MPA management resourcing – specifically the long-term costs of staffing, surveillance and enforcement – were prohibitive for AIG. Consequently, the Blue Belt Programme established a system of risk-based threat assessments from illegal, unreported and unregulated fishing and remote satellite surveillance efforts, which addressed Ascension's lack of enforcement capacity. Simultaneously, AIG (2020b) developed an MPA financial strategy to highlight funding gaps and ensure adequate resourcing in the future. Within that strategy, exploring innovative ways of supporting MPA management costs in the longer term has been a key priority, for example through licenses for a well-managed sports fishery and international research partnerships. However, Ascension's reluctance to take on the long-term financial costs of managing a very large MPA has undoubtedly been a stumbling block to momentum.

In St Helena, the Blue Belt Programme has provided financial support for SHG to buy equipment to monitor sand extraction operations and to employ a Marine Enforcement Officer who will monitor compliance with license conditions and will train a local counterpart. The Blue Belt Programme will continue to work with SHG to ensure that the full suite of appropriate resources, capacity and tools are available for effective policy implementation.

DISCUSSION

Although there has been broad consensus around many of the key features of IMM, there have been major challenges when attempting to transfer these into practice. For example, IMM approaches are usually attempted within existing governance regimes without consideration for their complexity and fragmented nature (Vince, 2015; Kelly et al., 2018; Stephenson et al., 2019), and without clarity over the long-term availability of resources (financial, human, and infrastructure) (e.g., Kelly et al., 2019). In small island contexts, effective engagement of local communities and the development of goals based on the community's values and their use and cultural needs have been shown to be key ingredients of success (Alder et al., 2000; Abecasis et al., 2013a,b), whereas failure has occurred due to lack of budget and insufficient political will (Batista et al., 2019). As a result, IMM initiatives have often resulted in only partial or temporary success (Stephenson et al., 2019).

These two case studies demonstrate how an IMM approach was applied in St Helena (**Figure 3**) and Ascension Island (**Figure 4**) to effectively manage human activities in small, remote islands. Although implemented differently according to context, in both cases, the key principles of IMM described by Stephenson et al. (2019) were applied - collectively agreed objectives, extensive stakeholder participation, cross-cutting and coordinated governance structures, revised legislative frameworks, explicit trade-off analyses and an adaptive management approach.

In Ascension, the process has resulted in the designation of 100% of the EEZ as an MPA; in St Helena, it enabled a coordinated approach to management of marine development activities within an already designated sustainable use MPA. Although both processes are still ongoing and long-term outcomes are yet to be realized, the context-specific application of these elements within a broad framework has resulted in protection measures for 885,000 km^2 of the South Atlantic, which undoubtedly lays the foundations for sustainable ocean health.

Lessons Learned From United Kingdom Overseas Territories Integrated Marine Management Case Studies

While we believe these IMM processes have been successful overall, there have been numerous challenges along the way. We highlight three key lessons learnt from the St Helena and Ascension processes.

Effective Processes for Involving Stakeholders in the Decision-Making Process Are Essential

Stakeholder engagement throughout the process is critical for long-term support of IMM (Abecasis et al., 2013a,b). However, engagement styles should be appropriate to the cultural and political norms for public participation in decision-making in any given context.

In St Helena, engagement was achieved through public consultation on the draft Marine Developments Policy rather than through a fully participatory decision-making process.

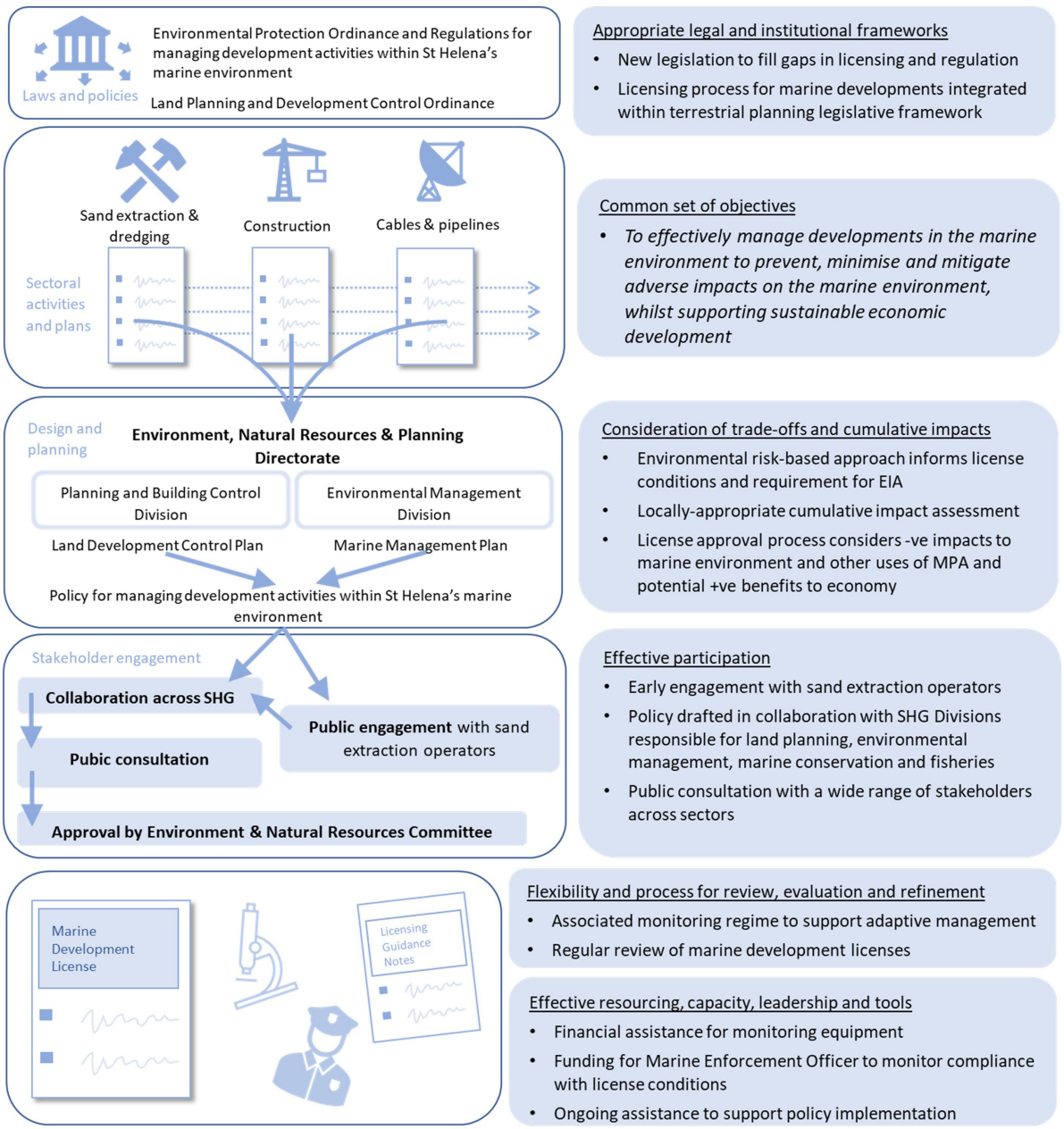

FIGURE 3 | Application of the Integrated Marine Management framework in St Helena.

Consultation, however, followed the St Helena Government Consultation Policy, which aims to encourage an active decision-making role for members of the community (including under-represented groups), and specifies a requirement to provide written feedback showing how consultation responses were taken into account. In Ascension, the process was less formalized, but public consultation responses to the evidence base and MPA design options were considered in the development of the MPA Management Plan, which also involved its own stakeholder consultation process, as did the inshore fisheries management process. Although these two processes were different, they were both consistent with on-island approaches and successfully ensured that the benefits of IMM were understood and that outcomes were supported by stakeholders.

The Need for Coordination Across Different Governance Scales

Ineffective governance, manifesting as either sectoral or fragmented approaches, is one of the issues that IMM seeks to address, but implementing the necessary changes in governance structures can be difficult (Kelly et al., 2019). For IMM, the various agencies and sectors involved must operate in

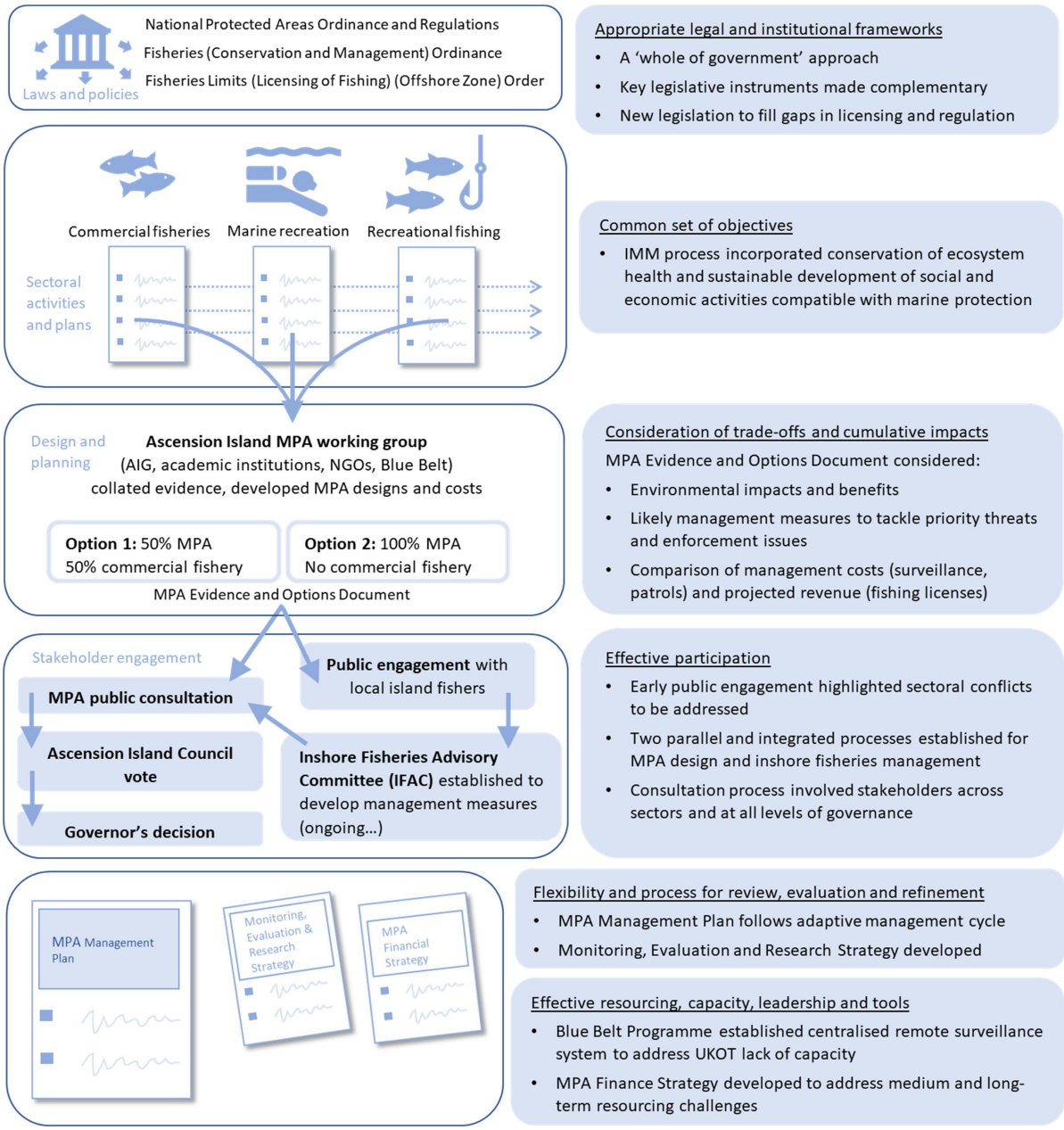

FIGURE 4 | Application of the Integrated Marine Management framework in Ascension Island.

a coherent way, enabling resource savings and improving management capability with benefits for the marine environment (Ko and Chang, 2010).

In Ascension, a combined Conservation and Fisheries Department within AIG naturally lent itself to cross-sectoral IMM, facilitating progress and coordination on both MPA and fisheries management measures. While such an integrated governance model is recommended, this reflects the scale of government on Ascension, rather than deliberate restructuring for IMM. As in many cases around the world, governance structures were already well-established in St Helena when the Blue Belt Programme began. Integration of the marine development licensing process into the terrestrial planning system will, however, address issues of land–sea interconnections and marine resource use conflicts. Although IMM is the responsibility of three different Divisions within the ENRP Directorate, SHG recognizes the importance of effective communication between regulatory authorities to avoid sectoral conflicts as the IMM approach moves into implementation and plans to establish a cross-division working group to facilitate effective integration and avoid falling into the trap of "silo-thinking."

The Need to Secure Long-Term Financial and Human Resources

A recurring challenge for any multi-stakeholder strategic planning process is agreeing how any management measures will be funded or managed in the long-term (e.g., Batista et al., 2019; Kelly et al., 2019). At the start of a process, the lack of clarity on the nature or extent of future management measures means governments or funders can be reluctant to commit resources to the implementation phase. However, stakeholders can be equally resistant to engage in the design phase without reassurance that funding mechanisms will be established to manage implementation. Ascension Island received government and non-governmental funding to support the planning process, but the challenges experienced demonstrate that identifying future funding gaps and viable ways to fill these should be integral to the early stages of an IMM process. Early discussion with all key decision-makers is important to manage expectations, provide reassurances and avoid delays in designation and implementation.

Now that the IMM frameworks have been established in St Helena and Ascension Island, continued capacity and resources to implement management measures must be ensured. In St Helena, it will be helpful to consider whether fees for marine development licenses could become a sustainable income stream. In Ascension, implementation of the financial strategy will explore options for MPA funding. The Blue Belt Programme is also assisting the UKOTs to investigate further sustainable financing options such as scientific hubs/centers of excellence, island tourism and blue carbon credits. The involvement of decision-makers in that process will be key to ensuring that recommendations respond directly to identified risks and concerns and that agreed approaches have top-level support.

Recommendations for Applying Integrated Marine Management to Other Small Islands

Applying these lessons to other small islands can be problematic, due to the context-dependent nature of IMM. The processes on St Helena and Ascension could not have occurred without UK Government assistance, arguably making these case studies atypical. However, adequate funding is the key challenge for any IMM process, followed by the successful application of key IMM principles. To assist other small islands planning an IMM approach, we offer two recommendations.

Prioritize Partnerships for Coordinated Identification of Long-Term Financial Resources

Accessing funding and adequate resources is a major hurdle for small islands with small economies and remote locations. Public sector funding programs are becoming more accessible to small islands needing to undertake IMM, particularly to mitigate and adapt to climate change. These programs should include sustainable finance mechanisms in the early IMM stages to develop long-term resources and build stakeholder support.

Where public sector funding is not an option, there are growing opportunities for leveraging partner arrangements to access alternative funding sources for IMM. The fundraising acumen of NGOs, such as familiarity with high-net-worth donor investments or trust fund arrangements, would be highly beneficial as a key role in many IMM partnerships. High profile examples of public-private partnerships for ocean planning (e.g., California Marine Life Protection Act and the Coral Triangle Initiative) and innovative financing mechanisms (e.g., Debt-for-Nature swap in Seychelles and climate finance for Blue Economy) continue to demonstrate the benefits of collaborations between governments, NGOs, and the private sector. Establishing multi-actor/multi-sector partnerships for IMM is therefore highly valuable, not only for comprehensive stakeholder engagement and technical expertise, but for the considered identification and mobilization of large scale, private or innovative finance.

Create the Necessary Governance Infrastructure Carefully to Underpin Integrated Marine Management

As our case studies show, each of the IMM principles represent important enabling factors for success, particularly strong, context-specific stakeholder participation. However, many of the other elements are harder to achieve if they are not underpinned by appropriate governance structures. Judicious establishment of some form of cross-departmental or multi-sectoral mechanism to provide IMM leadership will provide a governance structure that is more capable of balancing ecological, cultural, and socio-economic objectives, integrating land-sea connections, evaluating trade-offs, resolving stakeholder conflicts, and avoiding silo-thinking. Whether governance structures need to be created afresh or restructured, the decision-making and leadership powers and processes they support must be clearly and transparently communicated.

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This study is a *post hoc* analysis of how two case studies undertook an IMM framework, as actively promoted by the Blue Belt Programme through the advice, support, and assistance it provided, and reviewed against an IMM framework developed by Stephenson et al. (2019).

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

EH, HT, and NS developed the concept of the manuscript. EH and HT wrote the "Introduction" and "Discussion" sections. EH wrote the "Saint Helena" case study with input from TS, RH,

and EC. HT wrote the "Ascension Island" case study with input from DB and PW. All authors critically revised and approved the final version of the manuscript.

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