JNCC
Joint Nature Conservation Committee

Workshop Report

14th – 18th November 2016

CONTRIBUTORS AND CITATION

This report was drafted as part of the Territory to Territory (T2T) by Tara Pelembe, SAERI.

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PROJECT PARTNERS

Review process

Version	Date issued	Prepared by	reviewers	Date to complete
Draft 1	5/12/2016	Tara Pelembe	Paul Brickle, Ilaria Marengo, Katie Medcalf (Internal SAERI team)	7/12/2016
Draft 2	9/12/2016	Tara Pelembe	Alwyn Ponteen, Lavern Rogers, Paul Brickle, Ilaria Marengo, Katie Medcalf, Amanda Gregory, Dan Edwards, Stijn Schep, Tony Weighell	31/12/2017
Draft 3	26/01/2017		All participants	3rd February 2017
Final Draft	06/03/2017		Amanda Gregory	7th February 2017

ACKNOWLEDGEMENTS

We would like to thank everyone who support the workshop and the T2T partnership in any way: including the project partners, and all of the participants.

Figure 1: Workshop participants at the Montserrat Cultural Centre

CONTENTS

BACKGROUND AND CONTEXT

The project description, aims, objectives, actions, outputs and facilitation were agreed prior to the workshop in an overview document on the Territory to Territory partnership, outlined below to provide the background and context for this report.

The workshop background preparation, sub-group meetings etc. with associated documentation is available online.

This report is therefore relatively short and focussed primarily on the workshop outcomes[1].

PROJECT DESCRIPTION

This project is a Territory to Territory partnership between the Falklands Islands Government Institute (SAERI) and the Government of Montserrat (GoM) to transfer knowledge and skills from the South Atlantic to the Caribbean. This skills and knowledge transfer will focus on information management and marine spatial planning. The project is facilitated by the Joint Nature Conservation Committee (JNCC).

AIM

To enhance the GoM's data collection systems in accordance with best practices for sustainable governance and management and to transfer knowledge and skills from the South Atlantic to the Caribbean. The skills and knowledge transfer will focus on information management and marine spatial planning.

OBJECTIVES

To assist the government of Montserrat to;

1. Formulate a data infrastructure appropriate to the islands needs to support its Marine and Terrestrial spatial planning in the context of environmental management and socio-economic development;
2. Improve the legal framework for sustainable management and use of the ocean resources; and
3. Formulate a strategy to implement Marine Spatial Planning and produce a Marine Spatial Plan in the context of environmental management and socio-economic development.

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[1] All workshop generated documentation, including flipcharts and presentations are available either in Annexes or online.

ACTIONS

These objectives will be achieved through a collaborative approach between GoM, JNCC and SAERI.

1. Collation of background information related to;
   a. Current data availability and infrastructure;
   b. Which Departments are using what data;
   c. Share knowledge and skills to stakeholders on best practices in MSP.
2. Hold consultations with stakeholders and technical experts on the island of Montserrat from August 2016 and beyond (November 2016)

OUTPUTS

i.   A costed training and capacity building programme in respect of data management and building a data infrastructure to meet the needs of the GoM;

ii. A strategic overview of the spatial planning priorities for the island of Montserrat, including data requirements, consultation protocols and tools necessary to implement Marine Spatial Planning and also identification of the scope for continued collaboration, if any, between the Falklands and Montserrat;

iii. Strengthen collaboration between the UK Government, partners and Overseas Territories.

FACILITATION

JNCC has an Overseas Territories programme which aims to facilitate a number of partnerships across the UK's Overseas Territories. This project is one of these.

To these ends JNCC will support the project by facilitating and funding the Territory to Territory partnership between the Falkland Islands Government Institute SAERI and the Government of Montserrat.

BACKGROUND MEETINGS

Prior to the workshop, a series of background meetings were held to ensure that the workshop programme was tailored to the needs of the participants, and that preparatory work enabled best use of the time during the workshop week to enable concrete outcomes. Figure 2 shows the consultations and meetings that were undertaken in preparation for the workshop.
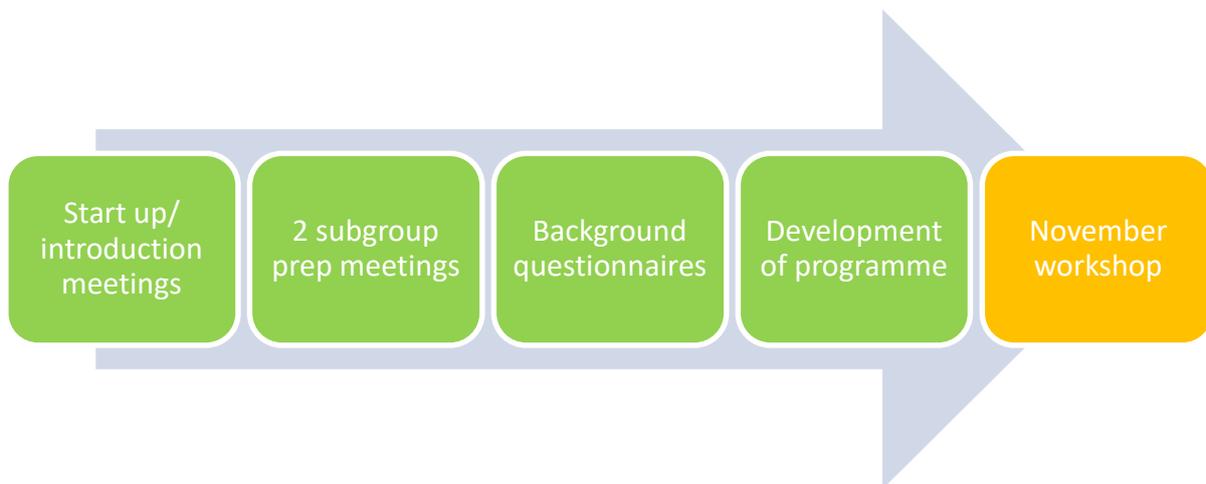
Figure 2: To show the preparatory process building up to the November workshop

The 2 sub-groups were chaired by GOM with technical support from SAERI and contractors.

Data Infrastructure Sub-group	Marine Spatial Planning Sub-group
• Lead: Mrs Lavern Rogers Ryan (GIS Manager ○ SAERI: Dr iLaria Marengo ○ Environment Systems: Dr Katie Medcalf	• Lead: Mr Alwyn Ponteen ○ SAERI: Dr Paul Brickle & ○ Dr Amelie Auge

Notes and actions from these subgroup meetings are available online {http://jncc.defra.gov.uk/page-7338} key messages include:

- Avoid duplication, and build on systems that already exist where possible
- Keep it simple
- Focus on tangible outputs and plans that can be implemented.

This was translated into the workshop programme, which aimed at producing two draft project plans (one for data infrastructure and one for marine spatial planning) that could be developed into full project plans post workshop with a view to sourcing funding for implementation, with seed funding for 'phase 1' implementation beginning April 2017.

The figure 3, shows the steps to be taken after the draft project plan/log frame are produced from the workshop.

| Draft project plan/log frame | Final project plan | Phase I implementation (April 2017) | Phase II implementation (tbc) |
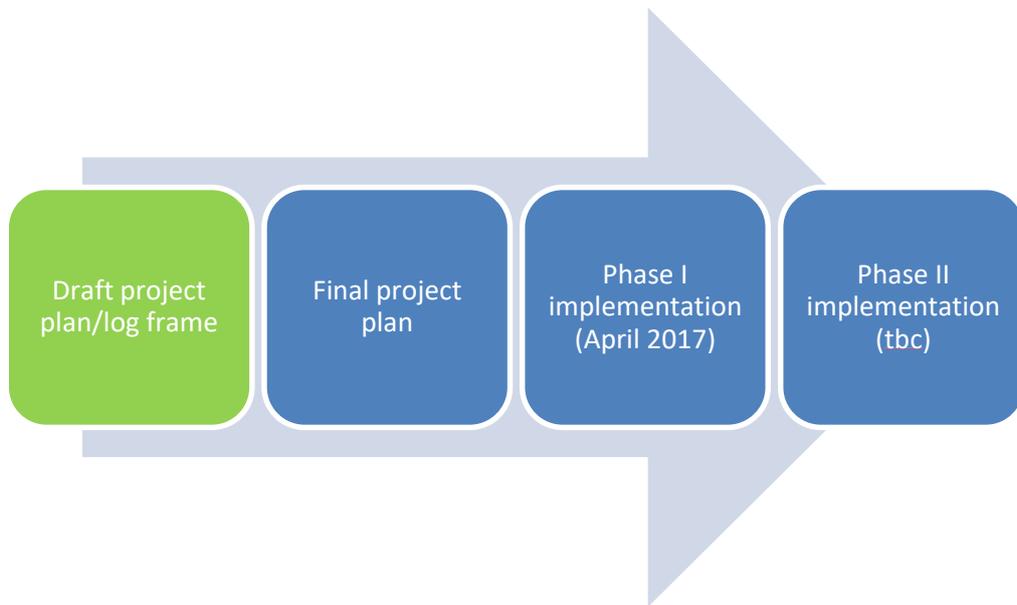
Figure 3: Planned next-steps post workshop

QUESTIONNAIRE RESPONSES

Members of both groups submitted responses to a series of questions, to provide background and context, to ensure that the workshop delivered against key messages - some key findings from these questionnaires, that fed into workshop discussions are captured here:
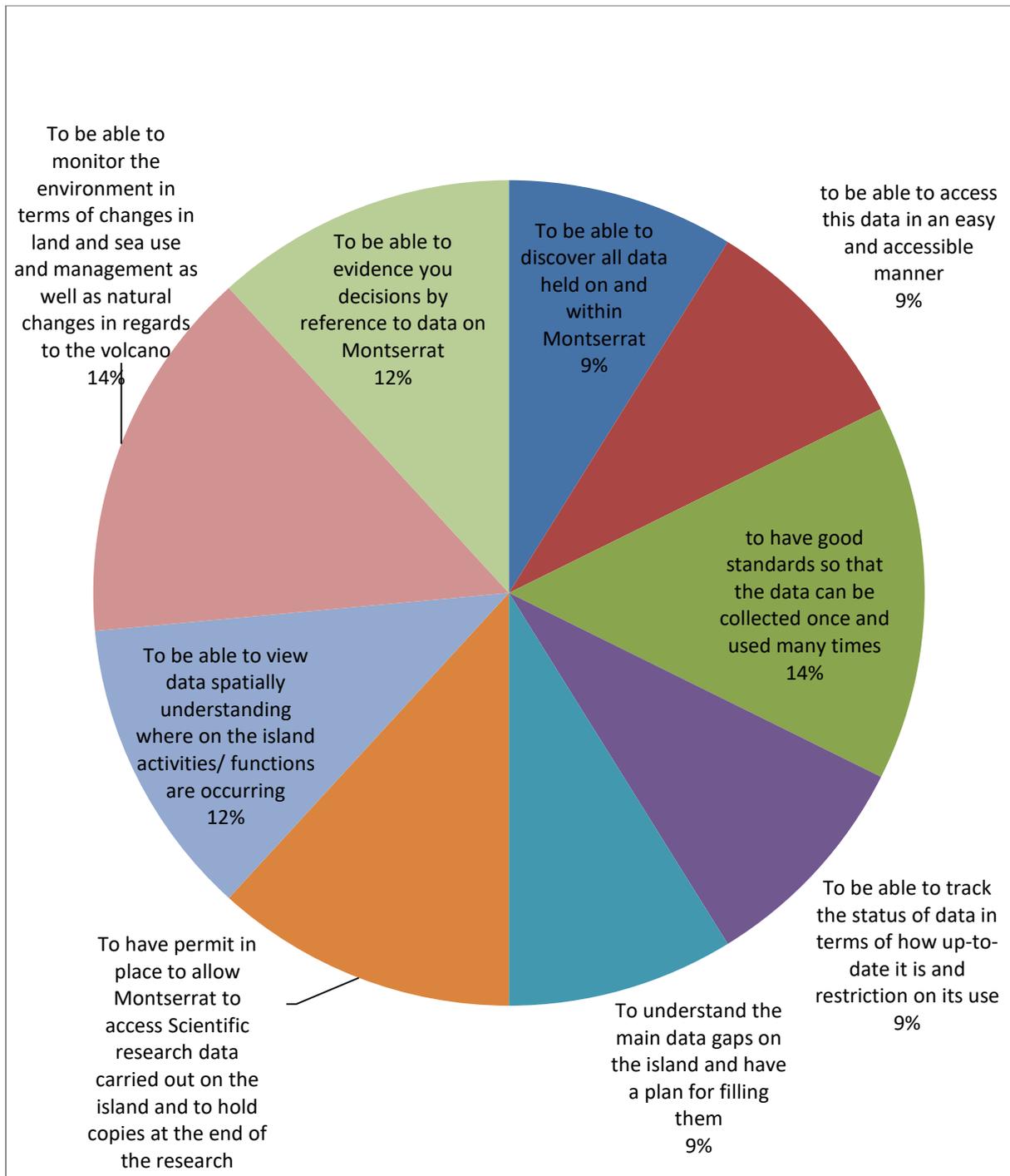
Figure 4: Responses to the question: what do you think will be the main advantage of a comprehensive data strategy and delivery?

Responses to the questionnaire indicated a comprehensive data strategy for Montserrat, was seen as being equally advantageous for number or reasons (as outlined in figure 4), with the most strongly supported reason being 'to be able to monitor the environment in terms of changes in land and sea use and management as well as natural changes in regards to the volcano'.

Data set
Avi fauna Dry forest
Avi fauna Mesic forest birds
Fauna Mountain chicken
Rainfall (Brades) (not up to date)
Feral Livestock (project based)
Tourism Statistics
Population and housing Census
Vital statistics
Economics statistics
Environmental/Agriculture
irrigation systems
Aerial Photography
Land Parcels
Contours
Fisheries Catch and Effort

Figure 5: Table to show combined list of data sets identified.

The initial scoping around existing datasets via the questionnaire process highlighted 15 data sets as outlined in figure 5.

Overall, more responses were received for questionnaires on data management than those on Marine spatial planning. The responses provided important background context for the workshop.

THE WORKSHOP

The workshop began with a formal opening ceremony. An outline of the opening ceremony programme is provided in Annex 1.

The detailed workshop programme which includes daily objectives is outlined in Annex 2; the full list of participants is outlined in Annex 3

All presentations are available online.

WORKSHOP OUTCOMES

DATA INFRASTRUCTURE

The two days of the workshop that focussed on data infrastructure came up with a plan for a future data management project on Montserrat in the form of a vision and a series of actions as follows:

DATA MANAGEMENT PROJECT VISION

▶ To have a centralised, reliable, secure data information management system for sustainable development to support Montserrat's unique natural capital.

DATA MANAGEMENT PROJECT OUTPUTS AND ACTIVITIES

Output	Activities	People
1: Metadata catalogue online	Update within 6 months	Database Manager + Quality Assurance
2: NEIS – National Environmental Information system	2 years Include un-digitised data	Database manager + Quality Assurance
3: Research permits (legal framework)	Review the wording July 2018	Legal adviser – long period
4: Storage and back-up -	Cloud	IT specialist
5: Data strategy		Strategic advice
6: Legal framework (data protection)		Legal adviser
7: Monitoring system to highlight changes		Formal data base manager/programmer
8: Training plan/succession planning Increase GIS training and knowledge Train specialists	Re-do financial systems to keep trained people on island.	Trainers in specialist areas
9: Digitising historic records		Archivist/cataloguist

In addition to the draft project plan outlined above, one of the workshop sessions focussed on building on the existing list of datasets identified by the questionnaires (fig 4) to start to get a more holistic understanding of the data available on island. In all an estimated 190 datasets were identified during this process (see Annex 5 for list).

MARINE SPATIAL PLANNING

The three days of the workshop that focussed on marine spatial planning came up with a vision and a series of recommendations as follows:

MARINE SPATIAL PLANNING VISION:

To foster a diverse and healthy marine environment for Montserrat that maintains the use of our treasured oceans in a sustainable manner to enhance the socio-economic benefits and cultural values.

MARINE SPATIAL PLANNING MISSION:

Mission: through community driven management, compliance and enforcement; building on local knowledge, partnerships and collaborations using innovation supported by robust data and evidence based decision making.

MARINE SPATIAL PLANNING PRIORITY DATA GAPS

The following were identified during the workshop as priority data gaps within the marine environment:

- Bathymetry
- Shipping and other man-made uses
- Water quality
- Shipping lanes and movements
- Moorings and anchorages
- Navigational charts and data
- Recreational areas/catch and effort
- Fisheries – lots of things (incl biological – age growth, reproduction) – 'fisheries dependent data'

MARINE SPATIAL PLANNING RECOMMENDATIONS

- Analysis of regional, UK, EU and International policy and legislative framework to be clear about what already applies to Montserrat
- Analysis of National policy and legislative framework to be clear about what already applies to Montserrat

- ▸ Consolidate all marine-management related legislations requirements into one single coastal marine management act for Montserrat
- ▸ Important to have a data catalogue (synergy with data management) build scenarios and identify gaps based on priorities from this workshop linking data requirements for MSP to the data management projects (as above)
- ▸ Another workshop after this one (in the Falklands) to identify the processes and framework which would include scientific knowledge, best practices, scientific methodology and policies
- ▸ Develop a strategy to identify funding to address recommendations
- ▸ Develop a monitoring and evaluation strategy for any MSP implementation

NEXT STEPS

The next steps for both areas of work are slightly different:

- For data management as outlined in figure 2, the data management draft plan will be developed into a full (phased) project proposal with a view to implementing phase 1 in April 2017. This will be done through the data infrastructure sub-group who will continue to meet to design and review the plan.
- For Marine Spatial Planning, the recommendations from the workshop have been outlined in this report, and further direction from the Government of Montserrat will be sought on options (if any) for taking these forward.

**Territory to Territory Partnership
Between
The Falkland Islands Government Institute SAERI
and
The Government of Montserrat**

PROGRAMME AGENDA

Monday, 14 November 2016
9:00 am — 9:45 am
Montserrat Cultural Centre

Audience Stands	Playing of the Territorial Song
Opening Prayer	Pastor Sherwin A E White
Welcome Remarks	Mrs Daphne Cassell, *Permanent Secretary, MATLHE*
Remarks	HE the Governor, Elizabeth Carriere
Remarks	Dr Paul Brickle, *SAERI Director*
Feature Address	Honourable Claude E S Hogan, *Minister, Agriculture, Trade, Lands, Housing and the Environment*
Vote of Thanks	Mr Alwyn Ponteen, *Chief Fisheries (and Ocean Governance) Officer*

Press Conference with Media House

ANNEX 2: WORKSHOP PROGRAMME

Note this workshop programme reflects the sessions as they were adapted and delivered during the course of the week.

DAY 1: DATA MANAGEMENT

OBJECTIVES FOR **THE DAY**

- Opening Ceremony
- Introductions and overview of the workshop
- Data management: what do we have in place, examples from other OTs (T2T), what do we want in the future?

Time	Title	Speaker/Lead
09:00 –09:45	Opening Ceremony	See attached programme
09:55 – 10:30	**Press Conference with Media House and Break**	
10:45 – 11:00	**Welcome and introduction**	**Alwyn Ponteen (Session Chair)**
11:05 – 11:25	Montserrat: Celebrating where we are currently with data management	Lavern Rogers-Ryan
11:25 – 11:45	Case Study examples	Dr Katie Medcalf
11:45- – 12:05	The South Atlantic UKOTs approach: benefits realised by implementing more strategic data management	SAERI: Tara Pelembe/Paul Brickle
12:05-12:30	Discussion	ALL
12:30 – 13:30	**Lunch**	
13:30 – 14:00	Vision for the future to enhance data for the benefit the people of Montserrat	ALL - facilitated session
14:00 – 15:00	People, data, systems: Brainstorming.	ALL – facilitated session
15:00 – 15:30	Priorities and what you would like to improve/what do you want the project to do.	ALL – facilitated session
15:30 – 16:00	Group feedback to Plenary and round-up	Plenary

DAY 2: MARINE SPATIAL PLANNING: SETTING THE SCENE FOR MSP, AND MSP IN MONTSERRAT

OBJECTIVES OF THE DAY

- Overview of Marine spatial planning, with examples
- Overview of current MSP in Montserrat and vision for the future

Time	Title	Lead/Presenter
09:00-09:05	**Welcome and introductions**	**Lavern Rogers-Ryan (Session Chair)**
09:05-09:30	Montserrat – what we have in place currently	Alwyn Ponteen
09:30 – 10:00	The Falklands Example: MSP in the Falklands	Paul Brickle
10:00 – 10:30	Questions and Answers	ALL
10:30: 11:00	**Break**	
11:00 – 11:30	Vision for MSP in Montserrat	Facilitated sessions
11:30 – 12:00	Priorities and what you would like to improve/what do you want the project to do.	Facilitated Sessions
12:00 – 12:30	Open floor discussion and Feedback	Plenary
12:30 – 14;15	**Lunch**	
13:30 -15:30	Brainstorm in sub-groups: - What data do we currently have? • List of datasets that each participant holds • Creating a Metadata catalogue for Montserrat	ALL: Facilitated sessions
15:30 – 16:00	Group feedback	Plenary

DAY 3: DATA MANAGEMENT AND GIS

OBJECTIVES FOR THE DAY

- Celebrate GIS day [2]
- Consolidate overview of current situation in Montserrat and priorities for the future
- Build a log frame for a Data Management project (to implement over the next 2 years)
- Presentations on current work being undertaken in the marine environment by other organisations.

Time	Topic	Lead/Presenter	GIS Day
09:00 – 09:20	Re-cap on the outcomes of Day 1	Tara Pelembe /Lavern Rogers-Ryan	**Open House GIS office**
9:20-9:40	Presentation Blue Halo	Robin and Andy	
09:40-10:05	Building the future project: Data	ALL-facilitated session (groups and 1-1)	
10:05 – 10:30	What is currently in place: Systems	ALL – facilitated session (groups and 1-1)	
10:30 – 10:45	**Break**		
10:45 – 11:15	Building the future project: Systems	ALL – facilitated session (groups and 1-1)	**Open House GIS office**
11:15 - 11:45	What is currently in place: People	ALL – facilitated session (groups and 1-1)	
11:45-14:15	**GIS day celebration at the GIS Office**	**Lunch for delegates**	**GIS celebration at GIS Office**
14:15-14:45	Overview of work in Montserrat	Coral Cay	
14:45 – 15:15	Building the future project: People	ALL – facilitated session (groups)	**Open House GIS office**
15:15 – 15:45	Building the future project: Logframe	ALL – facilitated session groups)	
15-45 - 16:00	Building the future project: Plenary	Plenary	

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[2] International Visitors to bring maps or posters for Montserrat GIS day

DAY 4: MARINE SPATIAL PLANNING: MARINE AND COASTAL DATA

OBJECTIVES FOR THE DAY

- Overview of the current situation in Montserrat around Marine Data
- Exploring other case studies, and making recommendations for the future

Time	Topic	Lead/Presenter
09:00 – 09:20	Re- cap on Day 1 of MSP	TP/AP
09:20 – 10:30	Building the future project: Data: What Marine data do we need and why?	ALL – facilitated session (groups)
10:30 – 11:00	**Break**	
11:00 – 11:30	Case Study: JNCC	Dan Edwards
11:30 – 12:00	A natural capital approach to marine and terrestrial spatial planning	Stijn Schep
12:00 – 12:30	Building the future project: People and projects: Who is doing what	ALL- Facilitated session (groups)
12:30 – 13:30	**Lunch**	
13:30 – 14:00	Building the future project: People and projects: who else do we need?	All – facilitated sessions
14:00- 15:30	Building the future project: Policy and legislation	ALL- facilitated session (groups)
15:30 – 16:00	Consolidation and feedback	ALL – facilitated session (groups)

DAY 5: MARINE SPATIAL PLANNING

OBJECTIVES FOR THE DAY

- Consolidated overview of current situation in Montserrat and plans and recommendations for the future

Time	Topic	Lead/Presenter
09:00 – 09:05	**Welcomes and introductions**	**Alwyn Ponteen – Session Chair**
09:05 – 10:00	**Workshop feedback:** Data management – plans for the future Marine Spatial Planning - recommendations	Tara Pelembe, Dr Katie Medcalf Dr Paul Brickle
10:00 -10:30	Closing remarks and vote of thanks	Amanda Gregory (JNCC) Alwyn Ponteen (GOM)
10:30 – 11:00	Break	
11:00 – 12:30	One-One sessions – discussions with technical support visitors	ALL:
12:30 – 13:30	**Lunch**	
13:30 – 15:00	One-one sessions – discussions with technical support visitors	ALL:

ANNEX 3: PARTICIPANTS LIST

The following participants attended all or some of the sessions

Name	Position	Organisation
Hon. Claude E. S. Hogan	Hon. Minister MATLHE	GOM
Hon. Paul Lewis	Hon. Minister of Communication & Works	GOM
Hon. Gregory Willock	Hon. Parliamentary Secretary	GOM
MATLHE SUPPORT STAFF		
Annette Cummings	DID NOT ATTEND	MATLHE
Dominique Witter	DID NOT ATTEND	MATLHE
Mrs Daphne Cassell	Permanent Secretary	MATLHE
Miss Melissa O'Garro	Director of Agriculture	MATLHE
Mr Claude Browne	Agriculture Development Officer	MATLHE
Mr Alwyn Ponteen	Chief Fisheries and Ocean Governance Officer	MATLHE
Mr Dyonne Duberry	IS&T	MATLHE
Mr George Skerritt	Lands and Survey	MATLHE
Mr Clement Meade	Chief Physical Planner	MATLHE
Mr Lavern Ryan	GIS Manager	MATLHE
Mr Randell Meade	GIS Officer	MATLHE
Mr Adolphus Ryan	Irrigation Extension Officer	MATLHE
Miss Lyandra Lee	Data Collector	MATLHE
Mr Stephen Mendes	Environmental Officer	Department of Environment
Mr Javiere Adams	Data Collector	MATLHE
Mr Sheldon Carty	President, Montserrat Fishers Association	

Mr George Ryan	Sargent Royal Montserrat Police Service	Royal Montserrat Police Services
Mr Joseph Irish	Senior Air Traffic Controller	John A. Osborne Airport, MCW&L
Mr Derrick Lee	Deputy Comptroller of Customs	Customs and Revenue Services
Miss Alphege Browne	Statistician	Department of Statistics
Miss Deidre R. Allen	Environment Health Officer	Department of Environment Health
Mr Roland Irish	DITES Technical	DITES
Mr Raphael White	Asst. Secretary Operations & Logistics	Disaster Management Coordination Agency
Nicolas Tirarod		Montserrat National Trust
Robin Ramdeen	Site Manager	Waitt Institute
Ute Zischka	Communication & Outreach Manager	Waitt Institute
Andy Estep	Science Manager	Waitt Institute
Susan Robertson	Field Base Manager	Coral Cay, Montserrat
Marcia Sorrell	Project Scientist	Coral Cay, Montserrat
Derry Gibson	Science Officer	Coral Cay, Montserrat
Friday 18th Morning Meeting with Ministers		
JNCC / SAERI Staff		
Amanda Gregory	Overseas Territories Officer	JNCC
Dan Edwards	Fisheries Data Officer	JNCC
Paul Brickle	Director	SAERI
Tara Pelembe	Deputy Director	SAERI
Katie Medcalf	Environment Director	Environment Systems
Stijn Schep	Consultant	Wolfs Company

Dr Paul Brickle

Director, South Atlantic Environmental Research Institute

Paul has a BSc (Hons) in Marine Biology from the University of Newcastle upon Tyne. He also has an MSc and PhD from the University of Aberdeen, Scotland in fisheries biology and zoology respectively. He is currently the Director of the South Atlantic Environmental Research Institute (SAERI). Paul's interests include the ecology and oceanography of the southern Patagonian Shelf, particularly the reproductive biology, age and growth, population dynamics and the population structure of marine species inhabiting the waters of this region. He also has a keen interest marine parasites and their use as biological tags for investigating the population structure and migration of fish hosts. Paul continues to be a part of a number of trophic studies of marine fish around the Falkland Islands and is interested in the environmental and fisheries impact on trophic structures in communities. Paul is also interested in shallow marine ecology, community ecology and biogeography of small isolated islands

Ms Amanda Gregory

Overseas Territories Officer, Joint Nature Conservation Committee

Ms Amanda Gregory is a scientific officer in the Joint Nature Conservation Committee (JNCC), a UK Government agency that supports the UK Government's policy objectives in the Overseas Territories, specifically through support for the Department for the Environment and Rural Affairs (Defra) and the FCO.

Ms Gregory works within the JNCC OT Programme, which is managed by Dr Weighell, and in the JNCC European Programme. Ms Gregory has facilitated the 'Greening the Economy' project in Anguilla in 2012. Within JNCC's European Programme she has represented the UK at the European Environment Agency as the National Reference Centre for Biodiversity, provide the secretariat for the European network of Nature Conservation Agencies (ENCA) and is the UK National Contact Point for the EU LIFE Funding Programme.

Dr Katie Medcalf

Environment Director, Environment Systems

Dr Katie Medcalf is Environment Director at Environment Systems, she is an environmental scientist with a passion for the power of data analysis and modelling, particularly using Geographic Information Systems to understand complex issues where location is the key link. Katie has over twenty years' experience in delivering successful projects in environmental policy, GIS, remote sensing and ecosystem service modelling. She has facilitated the OT's GIS working group meetings and is past chair of the Association of Geographic Information (Cymru). Katie has worked with SAERI, Government of Anguilla and many other OT's to help them realise the value of their data, filling data gaps using remote sensing and modelling risk, opportunities and natural capital solutions.

Tara Pelembe

Deputy Director, South Atlantic Environmental Research Institute.

Tara has an MSc from the University of Exeter in Conservation and Biodiversity and a BSc. (Hons) in Geography from the University of St. Andrews. She is currently seconded to the South Atlantic Environmental Research Institute (SAERI) from the Joint Nature Conservation Committee (JNCC) in UK where she continues to play a part-time role as the Senior Overseas Territories Adviser. Tara was previously the Head of the Conservation Department on Ascension Island and the Director of the Environmental Management Department on St. Helena. Tara's interest and experience covers the whole spectrum of environmental management from conservation and biodiversity to waste management and climate change. She has considerable experience in the management of both small-scale and larger scale multi-disciplinary projects and has led and/or contributed to a large number of programmes and projects that range from on-the ground implementation initiatives to multi-party partnership working platforms. She is also is an experienced in communication, networking, stakeholder engagement, workshop organisation and facilitation, project and programme management.

Stijn Schep

Wolfs Company

As an environmental economist, Stijn has the skills to incorporate the value of nature in economic methodology. He strongly believes that current economic processes do not incorporate the value of natural capital sufficiently, thereby leading to suboptimal levels of wellbeing and inefficient economic development. Based on the economic value of ecosystem services, he develops tools that are tailored to support development decisions on small islands.

Since his start at Wolfs Company in 2012, he has been working to bring environmental economic theory into practice, mostly within the Caribbean region. As part of the company, Stijn has been involved in natural capital studies regarding marine and terrestrial ecosystems in Aruba, Bonaire, Saba, St Eustatius, the Cayman Islands, Galapagos, the British Virgin Islands and Ghana.

Dan Edwards

Fisheries Data officer, Joint Nature Conservation Committee

Dan grew up in a fishing family and went to sea from a young age and spent over 6 years working in the fishing and aquaculture industries in the UK, Ireland and Australia. After completing his studies in Marine Resource (Fisheries) Management at the University of Aberdeen, Dan co-developed a participatory mapping methodology, FisherMap, for recording the spatial use of the sea by inshore fishermen in England. Dan moved to Scotland in 2009 as the Local Coordinator of a regional inshore fisheries management group for the Scottish Government, and subsequently worked on the ScotMap project mapping the fishermen's use of the sea in Scotland. Dan joined JNCC in 2013 as the Fisheries Data Officer where he specialises in the analysis of spatial fisheries data.

Name of dataset	Name of organisation who holds it	Format (excel, shape file etc.)
Chlorine Residual testing	Environmental Health –	Excel – not put together as yet
Characteristics of waste (over 2-week period in 2010)	As above	unknown
Epidemiological information	Ministry of Health Hazeld@gov.ms (copy stanlyeg@gov.ms)	unknown
Land registry -	Lands and survey department	Books – hard copy – was in an access database that crashed hoping to use software to scan the paper copies into electronic – need budget for that Trimble – made a proposal to do this – Land folio – would allow you to scan all of the paper records belonging to the parcel – see all the history and everything – currently data for each parcel is an envelope - USD $300,000 for the system
Survey plans – coordinate data[3]	Lands and survey department	Some electronic and some hard copy
Parcel data, aerial photography – 2010 is the last;2003, 1983, 1966	Lands and survey department	Older ones black and white – and hard copy most recent (2003 and 2010) electronic.
Auto photo maps from 2003 - rectified and printed on large sheets	Lands and survey department	

[3] GIS – shared facility between Lands and survey and PPU

Contour maps - from various years (of photographs) - 1:25,000 (some 1250, some 5000)	Lands and survey department	Plastic film
Turtle data	Department of Agriculture	
Climatological/meteorological data (wind speed/direction, cloud height, amount, mean sea-level, pressure, dry bulb/wetbulb pressure, relative humidity, dew point rainfall	John A Osborne Airport –	
Wet weather forecast and TAF (Antigua met office)	As above	Hard copy
Rainfall data at Gerald's + also rainfall data for mount pleasant – CIMH (Barbados)	As above	Open-source online
Aircraft movement data (include flight types and amounts, passenger movements) – stats cross reference with immigration	As above	
Avifauna, dry forest Medic forest Mountain chicken Feral livestock (project based)	DoE	?
Rainfall, meteorological. One location (1997 – present); two locations (81-97). One location lost in eruption. Ideas for modelling: shifts in raining season.	Airport MVO International multiple sources CIMH (Caribbean institute meteorology and hydrology) Agricultural department	Excel datasheets
Rainfall patterns	?	?
Water surface temperature	Antigua Meteorological office →CIMH	?

Irrigation Focus crops production data: sample of farmer's population → extrapolated based on total number of farmers	Agriculture department	?
Land-use report (including soil profiles)		
Backyard farming report		
Tourism statistics - Number of visitors per period - origin - Purpose of visit Revise data entry form		
Tourist exit surveys	Tourist board	
Population and housing statistics (census 2011) Intermediate data census in 2017	Statistics office	
Road traffic accidents Crime statistics (type of crime and characteristics offenders)	Police	
Health statistics (underreporting is an issue)(: - Disease outbreak - Injuries	Hospital	
Economic statistics Employments GDP (GDP is calculated each year and therefore the economic activity)	Statistics Office	
Construction activity Sand Mining Import of material	Physical Planning Customs office have licence and export figures Customs	

Fisheries		Alwyn Ponteen
Hotel / tourism		As there is a 7% tax then this might be recorded
List of plant species (2006) List of insect species (2006)		
Aerial photography (old black and white 81-84; just western part of island)		Digital
Land parcels (depending on the area:	Lands and survey department Inland revenue department (for property tax and	
Archaeological sites (incomplete)	National trust	Hard copy (currently final stage of digitising)
Contour map		
Fisheries (length-based data)		
Critical facilities (shelters, capacity, shortcomings, facilities)	Disaster management	
Erosion risk maps		
Volcanic activity and flows	MVO	
Vulnerable people and houses (contact information, type of disability)	Social services (island wide) Example of community dataset	? Hard copy
Utility map, reservoir location, distribution network, etc… Telecommunications	Digicel	
Geological information	MVO	
Key Biodiversity Areas	RNSM	Shape Files
Species lists	RNSM	Excel files

Species records[4]	GBIF	Online web portal
Species records	RSPB	Excel
Important bird Areas	Birdlife	Web portal

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[4] - 19256 records