

FINAL REPORT:

Review of Strategy for Sea and Air Access



February 2017





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List of acronyms

AAIB	Air Accident Investigation Branch
AGL	Airfield Ground Lighting
APAPI	Abbreviated Precision Approach Path Indicator
ASSI	Air Safety Support International (based in Crawley, UK)
BCS	Basic Connectivity Strategy for Montserrat
BVI	British Virgin Islands
CAA	UK Civil Aviation Authority
CDB	Caribbean Development Bank
CSO	Central Statistical Organisation Montserrat
ECCB	Eastern Caribbean Central Bank
C&I	Customs and Immigration
DFID	UK's Department for International Development
DMCA	Disaster Management Coordination Agency
ECCAA	Eastern Caribbean Civil Aviation Authority
ECS	Enhanced Connectivity Strategy for Montserrat
Emc2	Consulting Company for Environmental Impact Assessment at Little Bay
GDP	Gross Domestic Product
GDS	Global Distribution System (Amadeus, etc,)
GRT	Gross Registered Tons
GoM	Government of Montserrat
HMG	Her Majesty's Government
IATA	International Air Transport Association
ICT	Information and communications technology
ICAO	International Civil Aviation Authority
IMO	International Maritime Organisation
LCL	Less than Container Load
LIAT	Leeward Islands Air Transport Company (Regional 'Second Tier' Airline)

MAS	Montserrat Access Strategy- current Strategy for Access/Connectivity for Montserrat
MCW	Ministry of Communications & Works
MCS	Montserrat Connectivity Strategy
MNI	IATA Code JA Osborne Airport, Montserrat
MOT	Ministry of Transport
MPA	Montserrat Port Authority
MTB	Montserrat Tourist Board
MVO	Montserrat Volcanic Observatory
Nm	Nautical miles
OECS	Organisation of EasternCaribbean
OLS	Obstacle Limitation Surfaces
OJT	On-the-Job Training
OT	Overseas Territory
PA	Port Authority
PSO	Public Service Obligation
Pax	Passenger
PIU	Project Implementation Unit
PSP	Private Sector Participation
RESAs	Runway End Safety Areas
RoRo	Roll-on Roll-off cargo service
RPK	Route Passenger Kms
RWY	Runway
SAR	Search and Rescue
SLA	Service level agreement
SWOT	Strengths, Weaknesses, Opportunities, Threats
TEU	20-foot Equivalent Unit (smaller container size)
UVI	United States Virgin Islands
VfM	Value for Money
VFR	Visual Flight Rules
WTP/ATP	Willingness to Pay/ Ability to Pay

The objective is to undertake a comprehensive and evidence-based review of the strategy for sea and air access for Montserrat. The strategy recommends actions to upgrade the current access infrastructure where needed, to improve GoM capacity for managing and coordinating access effectively and to maximise effectiveness of UK aid money and capitalise on opportunities to share risks and costs with the private sector. A major study issued by GoM (MCW) in 2011 entitled *Montserrat Access Strategy* formed an important basis for the Review. Of fundamental importance to the connectivity agenda is the 2016 National Tourism Masterplan for Montserrat. In addition, a recent World Bank publication entitled *Connectivity in the Caribbean* provides insights into transport operations as well as examples of good practise. Analysis of connectivity experience in a sample of other OT's has supplemented the background research.

Instead of Access, the Review has used the more recent term *Connectivity*, which is not uni-directional and embraces the concept of transport *to* and *from* Montserrat. Within the Caribbean, inter-island passenger transportation has in recent decades been dominated by air transport: ferry services serve predominantly inter-island (domestic) markets and are not generally well developed. A notable feature of air connectivity is the very good *external* air connectivity (with long-haul direct flights) in close proximity to Montserrat. VC Bird Airport on Antigua is a very short distance away from Montserrat via short-haul feeder air services operated by several Third Tier airlines. Montserrat also has adequate short and medium-distance *direct* maritime freight connectivity through regional RoRo liner services that operate locally in the Caribbean. In common with the ferry operation however, there are significant breaks in maritime connectivity during the winter period, when Little Bay jetty cannot be operated due to rough seas.

The main *connectivity/access constraint* for sea and air passengers exists in the *Last Mile* linkages, between the islands of Antigua and Montserrat. During the winter period the *Last Mile* maritime connection is often severed, due to high seas, resulting in ferry berthing difficulties and safety concerns at Little Bay Port. The Review assessed that immediate design and implementation of the Little Bay Port protection breakwater project is the key to ensuring year-round lifeline ferry (and roro cargo) services. Until there is a safe harbour it is unlikely that ferry operators would assign faster more modern ferries onto the route between Antigua and Montserrat, for reasons of safety and insurance. It is also unlikely that other regional ferry operators from neighbouring islands would call Little Bay Port during the winter. The current situation thus tends to dampen day-tourist growth potential as well as reduce GDP growth. The scorecard presented indicates some major investment required; the need for a renewed focus on integrated transport operations plus some focused institutional changes.

Analysis led to the development of a Basic Connectivity Strategy, based on a set of investment, operational and institutional recommendations to sustain the lifeline ferry and air transport routes to/from Antigua. A new tendering procedure is underway for the lifeline ferry and air transport services, in which some innovative aspects of service provision, are being tested and introduced. The

new requirement includes performance management in service contracts and undertakes risk sharing with the private sector, where possible. An Enhanced Connectivity Strategy has been developed according to the forecast growth of the tourism market, based on the Tourism Masterplan.

In a Basic Connectivity Strategy, it is recommended that:

An immediate focused Little Bay Port breakwater study be conducted leading to large-scale investment in an appropriate (scalable) Phase 1 breakwater at Little Bay;

A small-scale study be conducted to assess the optimum ferry vessel type and operational service characteristics for the lifeline sea crossing;

The Access Coordinator be engaged to implement Time and Motion Studies on the new ferry service with ferry and air service contracts monitored and fine-tuned over the short-term (2016/2017) period; and

The Access Connectivity Coordinator has a more focused (operational) role, supported by additional administrative staff. Capacity needs to be built in the short-term to start to develop the tourism product and to ensure that marketing activities link tourism and access. Policy and planning for connectivity infrastructure should be handled in the short-term through the DFID/Governor's Office, tapping into high-level technical expertise.

If actions are undertaken in an integrated manner, connectivity will be improved. In particular, careful tourism-marketing activities should be undertaken to help bolster ferry (and to a lesser extent, air) transport flows. Tour agents in Antigua see substantial day-trip tourist potential for the short inter-island ferry route to Montserrat. A sustained tourism effort, if successful, will increase load factors and reduce the magnitude of annual ferry and air subsidies.

section 1

Introduction

1.1 Background

Access is an essential component of every country's development agenda. Montserrat is no exception and, over the years since the start of volcanic activity in the mid-1990s, access to and from Montserrat has been a major constraint to the island's development. Adequate access continues to be critical for Montserrat: Tourism is Montserrat's most promising export and its tourism product cannot be further developed without efficient access links (connectivity). Montserrat's local private sector needs cost-effective access to the regional market to source inputs and build a larger customer base. Montserratians (in particular poor and vulnerable individuals) rely on affordable access to goods and services that might not be available on island, in particular specialised health care and education. This also includes emergency evacuation (a UK contingent liability).

DFID has subsidised access to/from Montserrat since the volcanic eruption in 1997 led to the destruction of the island's W.H. Bramble Airport, also known as Blackburne Airport, a small international airport on the east coast of the island and the abandonment of its seaport at Plymouth. The eruption of the nearby Soufriere Hills volcano obliterated much of the southern part of the island, including the capital, Plymouth.

DFID is helping Montserrat to gradually gain more economic self-sufficiency through enhanced private sector activity. DFID's other objectives are to support public services in cost-effective ways and to limit HMG's risk of contingent liability.

A major study issued by GoM (MCW) in 2011 entitled *Montserrat Access Strategy*¹ forms an important basis for the Review, as does the World Bank's 2014 report on *Connectivity for Caribbean Countries*².

1.2 Objectives and rationale

The objective of the Review is to undertake a comprehensive and evidence-based review of the strategy for sea and air access for Montserrat. The strategy will recommend actions to upgrade the current access infrastructure if needed, improve GoM capacity for managing and coordinating access effectively, maximise effectiveness of UK aid money and capitalise on opportunities to share risks and costs with the private sector (Annex 1: ToR's).

1 *Final Report*, June 2011.

2 *Connectivity for Caribbean Countries An Initial Assessment* Cecilia Briceño-Garmendia, Heinrich C. Bofinger, Diana Cubas and Maria Florencia Millán-Placci, World Bank 2014

1.3 Overview of Montserrat air terminal

The airport located at Gerald's' in Northern Montserrat with a 600 metre (1,968 foot) long runway accommodates nine-seater Britten-Norman Islanders (BNI) and 19-seater DHC-6 Twin Otters. The DHC-6 Twin Otter is the maximum aircraft size permitted to operate at the airport. Some obstacles have been defined close to the Airport, which need to be marked and lit³.

1.4 Overview of Montserrat sea terminal

An open seaport with a 'temporary'⁴ berthing infrastructure is located at Little Bay Port. It comprises a single finger pier/jetty measuring 82 metres (262 feet) in length, 10.4 metres (33 feet) in width and maximum depth of water alongside ranging from 2.5 – 5.5 metres (8 – 18 feet). Landside superstructure and facilities for (predominantly RoRo) cargo accommodation and processing are available. The berth configuration separates ferry from RoRo operations. Facilities are provided for processing ferry passengers and yacht visitors. A phased seaport redevelopment plan is under preparation including a protective breakwater.

1.5 Overview of current institutional arrangements

Since the reintroduction of the sea and air service, GoM has been struggling with the coordination and management of access. Key issues are performance management, management information, coordination between service providers as well as within GoM and the balancing of sea and air access (currently two airlines operating Britten-Norman Islanders).

In 2010, DFID funded the role of an access coordinator to address some of these concerns. Following the appointment, an access strategy (MAS) was drafted in June 2011, suggesting short and long-term measures to improve access to Montserrat in keeping with the sustainable development plan. Although short-term elements of the MAS have been implemented, several key longer-term components have been delayed. In 2016, the Premier decided to move the access portfolio to his portfolio. This provides an opportunity for a fresh start.

As tourism, agriculture and the manufacturing sectors depend on the movements and throughput of people, goods and produce for their development and contributions to the economy, the MAS should be strongly linked to these and to tourism development in particular. Likewise, the private sector will not be as viable as it should, nor will it develop or attract the levels of investment required to sustain growth and return contributions to the state, without sustainable access.

1.6 MAS Review consultants working arrangements/ schedule

3 It would be impossible to remove all or some of these obstacles, as northern Montserrat is hilly.

4 The temporary jetty was constructed and commissioned in 1997 at a cost of £2.6 million.

The MAS Review consultant commenced work on 16 May 2016 and following a brief period of desk review mobilised in Montserrat on 24 May 2016. Annex 7 portrays the field visit and consultation programme in Montserrat and Antigua. Following demobilisation from Antigua late on 3 June 2016 this Review report was prepared and submitted internally on 10 June 2016. Technical calls with DFID took place on 16 and 17 June 2016, written comments received on 7 July, permitting finalisation of the draft final report by 17 July 2016. Following receipt of final comments from Stakeholders in January 2017, the Final Report is issued in February 2017.

1.7 Structure of the report

Subsequent to this introduction, the report is structured as follows:

In section 2, background information including a chronology of access/connectivity interventions, and definitions are presented. In section 3, the current access/connectivity situation is described. In section 4, a summary of the core elements of the Basic Connectivity Strategy (BCS) is presented. In section 5, a summary of the core elements of the Enhanced Connectivity Strategy (ECS) is presented. Finally, in section 6, the way forward is summarised and key recommendations made.

section 2

Background and connectivity definitions

2.1 Introduction

In section 2.2, a brief description of the historical development of Access/Connectivity since the start of the volcanic eruptions on Montserrat in 1995 helps set the recommendations of the Montserrat Connectivity Strategy review in context.

In section 2.3, some further definitions of access and connectivity are provided with a brief description of long and short-haul connectivity and identification of important gateways.

2.2 Chronology of Access/Connectivity issues and developments

1995 – 1996

In spite of volcanic activity in this period, both air and sea access infrastructure was not affected and hence they remained open. However, in April 1996 following the third and final evacuation of Plymouth, Montserrat lost access to its seaport infrastructure. Nevertheless, the airport remained open, with access through the North Road via Jack Boy Hill up until 25 June 1997. In 1996, a first attempt was made to build a temporary jetty in Little Bay; however this was destroyed by the passage of Hurricane Luis in that same year. By 1997, these eruptions had destroyed the capital town Plymouth and its schools, government buildings, the main hospital, air access, energy generation and the port.

1997 - 1998

In 1997, a new jetty was constructed at Little Bay north of Brades at a cost of approximately EC\$11 million or £2.6 million and was opened to shipping in July 1997. Following the catastrophic eruption in June 1997, the airport became unusable. As part of its emergency response, DFID directly contracted a ferry service and a helicopter service, both of which commenced in July 1997. For the

period July 1997 to December 1998 (18 months) these services cost DFID approximately EC\$21 million or £5 million.

1999 – 2005

DFID continued contractual arrangements with ferry and helicopter service providers at an annual cost of EC\$ 13 (£3.1) million which over that period amounted to EC\$ 91 (£21.7) million. For the period 1997 to 2005 when the new airport was opened, DFID had spent EC\$ 111 (£26.4) million on the provision of access to and from Montserrat.

Between 2000 and 2005 it became clear that the island's access arrangements would have to support a settled population hence necessitating the development of an airport, a new town centre, and appropriate seaport infrastructure. A decision to re-establish air access to Montserrat was taken by the UK Prime Minister at the time. In that same period, the level of access provided facilitated renewed economic growth through increased trade and tourism. For example, the sea link facilitated the growth in tourist arrivals to 13,100 in 2004.

2005 – 2010

The John A Osborne airport was opened in July of 2005 near Gerald's and both the helicopter and the ferry services were terminated. In December 2008 and 2009, a seasonal Christmas ferry service was introduced to facilitate these peak period tourists. DFID agreed to provide a transport subsidy to facilitate these services. DFID agreed to facilitate the establishment of an airline service (operated by Montserrat Airways Limited) and a ferry service, initially only running a few times per week). In addition, DFID agreed to increase the transport subsidy allocation to facilitate all year round access to Montserrat.

2010 – 2016

In 2010, after an unsuccessful attempt to get the private sector to operate the ferry on a commercial basis, DFID agreed to increase the ferry subsidy but it could only secure a slow, poor quality service operating three days a week (operated by Twin Islands Ferry Limited). Recognising the need for a more adequate service that could operate five days a week, attempts were once again made unsuccessfully to generate private sector interest. Instead DFID Ministers approved an increased access budget of £1.5m per year (sea and air) in April 2013 as part of the broader "Strategic Growth Plan" agenda. Increased funding secured the introduction of the *Caribe Sun* in November 2013, which has been operating between Montserrat and Antigua until April 2016.

2016 Very recent developments

There had been increased reports by public and in media of poor service delivery by the ferry operator. This was difficult to assess without management information or performance indicators being in place. DFID had thus strongly recommended since December 2015 to begin a more sophisticated contracting process that would address current contractual shortcomings.

The launch of the contracting process was delayed and the previous ferry contract ended in April 2016. The government, supported by the UK, therefore put in place a temporarily extended and more affordable air service to sustain adequate access in the absence of a ferry service. FlyMontserrat and SVG/ABM Air put on additional flights at a substantially reduced rate to move (subsidised through the redirection of the ferry subsidy) would-be ferry passengers until a new ferry service commenced operations.

In parallel, the procurement process to put in place a new ferry service (paired with a revised air service) moved ahead. The tender documents requested the private sector to come up with creative solutions for providing cost-effective access to Montserrat and strongly emphasized performance management. One reason for discomfort on the ferry service has been excessive ferry movement due to rough sea conditions on the route during winter months; hence ferry size/ stability is an important service issue for that period of the year. Performance indicators will also include better coordination between operator, customs and immigration to streamline processes.

2.3 Connectivity definitions

Access and Connectivity

A conventional definition of Access is *means of approaching or entering a place/location*. Accessibility is hence location specific - how easy it is to get to (and that is the same as getting back from). The Review has used the term *Connectivity*, which is not uni-directional, and better describes transport linkages to and from Montserrat; a British overseas territory (OT) located in the northern half of the Lesser Antilles⁵. The Review has proposed a two-pronged approach: definition of a Basic Connectivity Strategy (BCS), together with an Enhanced Access Strategy (EAS).

Basic Access/Connectivity (BCS)

The Basic Connectivity Strategy (BCS) is formulated to provide the two-way transport connectivity needs of Montserratians and Montserratian businesses⁶ for the lifeline ferry and air transport routes. It entails a series of actions (investment, operational and institutional related, spread over a short-term *Immediate Action Plan* period), plus a limited number of interventions extending into the medium-term. Planning and implementation of the Basic Connectivity Strategy should take place with immediate effect, wherever possible.

Enhanced Access/Connectivity (ECS)

5 Connectivity for Caribbean Countries An Initial Assessment Cecilia Briceño-Garmendia, Heinrich C. Bofinger, Diana Cubas and María Florencia Millán-Placci, World Bank 2014

6 Connectivity potentially includes connectivity for ICT purposes, such as linkages to regional submarine fibre-optic cable networks.

The pace of development of the ECS would largely reflect the pace of development within the tourism sector - as well as developments in local industry and commerce that might be spurred by tourism, or investments in other sectors such as geothermal energy, etc. Although the ECS is developed for the medium-long term planning horizon, certain preparatory steps may be required in the short-term. The Enhanced Connectivity Strategy would be developed in line with the real pace of development, to avoid over or mis-investment thereby ensuring sensible use of resources.

Long-haul Connectivity

Montserrat is a small island developing state of 102.6 square kilometres situated in the Leeward Island chain of the Eastern Caribbean. Montserrat lies between 16°40' and 16°50' North Latitude and 62°9' and 62°15' West Latitude, between Antigua and Guadeloupe. Each of the Caribbean islands manages their own connectivity to the outside world. This may be in part because each island sees itself as an independent market from the rest, and therefore is competing with its neighbours for tourism traffic. Extra-regional routes are generally direct. The majority of air traffic is related to the burgeoning tourism sector.

However, long-haul travel to and from Montserrat relies nearly entirely on Antigua as a transit hub. The VC Bird International Airport is a major airport in the Caribbean - the busiest in terms of flight movements in the English speaking Caribbean. LIAT, the only interconnecting regional airline is based there and Antigua is also a hub for its operations. All the major international airlines that fly to the region (from the States and Europe) have direct flights to Antigua. Antigua will therefore remain a major hub and will provide short-haul lifeline route connectivity for Montserrat into the foreseeable future. (In a similar manner, Guadeloupe and Martinique are each presently well-served by two daily flights from Paris (operations by Air France, Air Caraïbes, and Corsair).

A notable feature of air connectivity is the very good *external* air connectivity (provided by long-haul direct flight services) in close proximity to Montserrat. Notably, V.C. Bird airport on Antigua is only 36 nm distant from J.A. Osborne airport, with Basseterre, St. Kitts only 50 nm and Pointe-à-Pitre, Guadeloupe only 57 nm distant. All of these airports (along with Vance W Amory, Nevis and Codrington, Barbuda) are within easy reach of Montserrat by small aircraft. The priority for *Last Mile* air connectivity therefore will be to arrange seamless short-haul connectivity with V.C. Bird airport on Antigua, Pointe-à-Pitre airport on Guadeloupe, etc. Scheduled flights from London to the Dominican Republic (Punta Cana), St. Kitts and Puerto Rico (San Juan) all touch down in Antigua⁷. The good level of *external* air connectivity is a valuable asset and is of relevance to plans to develop tourism on Montserrat, as holidaymakers staying nearby on Antigua, St. Kitts and Guadeloupe may have a different type of eco-tourism vacation experience available to them, on Montserrat.

Similarly, Montserrat has a good level of *external* maritime connectivity, due to its close proximity to St. Johns Port on Antigua and to container transshipment facilities on St. Marten, and elsewhere in the UVI.

7

Fares from the UK to Barbados, Saint Lucia and Antigua are usually priced at similar levels.

Short-haul Connectivity

The current main connectivity/access *constraint* for sea and air passengers currently exists on the *Last Mile* linkage (between the islands of *Antigua* and *Montserrat*). For sea (ferry) passenger transport, the *Last Mile* connectivity severed during winter, with ferry berthing and safety concerns at Little Bay Port.

Montserrat also has adequate short and medium-distance *direct* maritime freight connectivity through the regional RoRo liner services that operate locally in the Caribbean as well as the regular (smaller) cargo services from the port in Antigua. However, in common with the ferry operation, there are significant breaks in connectivity during winter when Little Bay jetty cannot be operated safely.

Air transport gateways in the Caribbean

The important existing gateway for Montserrat is the V.C. Bird airport on Antigua. Basseterre Airport on St. Kitts and Pointe-à-Pitre Airport on Guadeloupe are also potential gateways of relevance in future.

Maritime transport gateways in the Caribbean

Important regional gateways of relevance are St. Johns Port in Antigua, and Port St. Maarten's Captain David Cargo Quay, located at the Dr. A.C. Wathey Cruise & Cargo Facility. The Port. St. Maarten terminal has grown over the years and is now a regional sub-hub for container transshipment, serving a wide range of international carriers as well as the domestic market.

Lifeline route Access/ Connectivity

The two lifeline connectivity routes between Antigua and Montserrat⁸ are the Airbridge and the Seabridge; the latter includes ferry and small cargo services. The lifeline routes serve a mixture of foreign tourists, Montserratian business people and Government officials, as well as Montserratian citizens. Ferry transport is the only alternative to air transport, and has lower fares but lower levels of passenger comfort. In 2015, 78 per cent of the 7,236 visitors that come to Montserrat for leisure stayed overnight (22 per cent were day-trippers). (See Annex 3, section 3.11.) At certain times, such as at Christmas and around the St. Patricks Day holiday, they remain on-island for longer periods. Ordinary Montserratian citizens use the airbridge for emergency purposes (medical reasons) but tend to use the ferry for short business and shopping trips in Antigua, with larger passenger baggage allowances being attractive. Further lifeline cargo routes exist between Montserrat and the regional container transshipment cargo transport hub at Port St. Maarten, etc.

8 As recognized in GoM's National Tourism Masterplan for Montserrat, TPA, January 2016.

Strategic Plan

The strategic plan is a course of action to achieve long-range goals, generally from five to ten years, and is linked to economic development plans. In order to develop strategic plans, Government develops summary studies on finances, operations and the external environment. They influence the development of tactical plans⁹.

⁹ The Review is concerned with (the higher level of) strategic planning.

Good Practise for transport development in small island developing states (SIDS)

Best practice can be defined in its simplest form as a way or method of accomplishing a business function or process that is considered to be superior to other known methods. A business' primary goal is to be profitable and so it is reasonable to expect only the adoption of practices that enhance profitability, or at least business continuity. The nature of best (or good) practice becomes a little clearer when it is understood as a highly interactive and aspirant pursuit of a 'greater good'¹⁰.

International good practices of relevance for the Access Review¹¹ include safety, sustainability, operator efficiency and organizational processes resulting in profit (or subsidy minimization) are likely to deliver the desired results in the most efficient way.

Small island developing States (SIDS) are a diverse group of island countries that share some common features and vulnerabilities such as insularity, geographic remoteness, and smallness of economies, populations and area. Together, these factors emphasize the importance of well-functioning, reliable, sustainable and resilient transportation systems, in particular maritime and air transport for SIDS development and survival¹². The SIDS grouping includes nations that vary in land, topography, population, resources, and levels of development as well as susceptibility to extreme weather events. However, their transport systems face common obstacles that undermine their global, regional, and local connectivity to communities, markets and services. Latest data and developments in transport underscore the disadvantages facing SIDS and their inability to keep pace with ever larger vessel sizes, industry consolidation and globalized liner shipping networks that are driven by scale economies.

section 3

Current situation

3.1 Introduction

The section of the report describes the current access situation in Montserrat. The section quotes extensively from the analysis conducted in an earlier MCW report on Access/Connectivity Strategy¹³. It is noted that air cargo services are somewhat insignificant. They are partly provided by specialised courier charters in small aircraft, and are consequently not dealt with here.

10 It is this meaning that differentiates it from benchmarking and measurement against key performance indicators.

11 Air and ferry transport services.

12 *Small island developing States: Challenges in transport and trade logistics*, UNCTAD, 2014

13 MCW, *Final Report, Montserrat Access Strategy*, Noakes, 2011.

Section 3.2 provides contextual information on regional air, maritime and ferry market conditions in the Caribbean. The Caribbean states are sea-locked countries (for the most part), small economies, with a high level of vulnerability to natural disasters.¹⁴

Section 3.3 describes the physical nature of the two lifeline crossings (by sea and air) between Antigua and Montserrat. This is followed in Section 3.4 by an overview of regional air, maritime and ferry markets, of sea and air terminal facilities, followed by an overview of service conditions in Section 3.5. An overview of the agencies currently involved in different aspects of access/connectivity provision and support is provided in Section 3.6. Montserrat is a small island and is dependent upon the reliability and condition of its lifeline ferry and air transport linkages, services and facilities to promote tourism development. The Access/Connectivity Coordinator plays a key role in this. A description of the current Access Coordination role is provided in section 3.7. The existing situation is then summarised in a continuation and update of the 2011 SWOT analysis in Section 3.8 and a Scorecard is presented to indicate *at a glance* view of the relative priorities for action in Section 3.9.

3.2 Regional transport markets

The three markets of relevance to Montserrat are the (ferry) passenger and marine cargo markets and the airline passenger market. These are described in turn below.

Maritime ferry passenger market

A recent UN report studies the main factors that influence the demand for maritime passenger transportation in the Caribbean. The results showed that this demand is related to the real fare of the service, international economic activity and the number of passengers arriving in the country by air.¹⁵

Within the Caribbean, inter-island passenger transportation has thus far been dominated by air transport. Maritime passenger transportation also has potential given the region's large maritime space and high ratio of sea to land mass. Reliable year-round sea transportation has the potential to encourage trade and tourism.

Currently ferry service in the Caribbean is scattered in niche markets and usually local, mainly to connect islands within the same country. More than half of the Caribbean traffic is concentrated in domestic traffic, representing 66% of the total ferry traffic. Antigua provides approximately 624 trips to Barbuda at a distance of 28 mn although the major constraint is due to rough seas, making the crossing longer and uncomfortable. The Barbuda Express ferry is the only ferry operator providing

14 This translates into a cost premium for developing both infrastructure and transport services, regardless of the degree of efficiency of the investment decision process.

15 *Towards a demand model for maritime passenger transportation in the Caribbean: A regional study of passenger ferry*: Omar Bello, Willard Phillips, Delena Indar, Studies and Perspectives, UN ECLAC, January 2016

domestic services between Antigua and River Wharf, Barbuda, with a 60-seat capacity that moves approximately 500 passengers annually. An innovative wave-piercing catamaran provides passenger comfort with high speed. The journey time of 90 minutes in nearly all weather conditions makes it ideal for business use and for day-trips or excursions. The crossing can be rough but the ferry does not run in risky conditions so safety is a priority and if the weather is too bad the ferry will be cancelled. A reason for the low traffic volume is that passengers are mainly locals and the population of Barbuda only 1,500.

A single operator monopolizes maritime passenger transportation in most countries, while in others, namely St. Kitts and Nevis, Anguilla, Sint Maarten/Saint Martin, United States Virgin Islands and British Virgin Islands, this service is provided by several operators. The latter is especially the case for countries that comprise numerous peripheral islands. For instance, there are multiple operators within the United States Virgin Islands and within the British Virgin Islands¹⁶.

St. Kitts is the only country that has multiple operators providing a service for the same route, between St. Kitts and Nevis. An advantage for passengers of this route is that the path is between islands so the sea is not rough compared to most open sea routes. The crossing distance of 11 nm is relatively short and slow: the ferry ride between St. Kitts and Nevis takes about 45 minutes. There are six ferries operating between the islands: MV Caribe Queen; MV Carib Breeze; MV Carib Surf; MV Mark Twain; MV Sea Hustler and the Sea Bridge¹⁷. Ferries travel to Charlestown, the capital of Nevis, whilst the Seabridge ferry docks at Cades Bay. On demand water taxis from St Kitts normally arrive at Oualie Beach on the island's north side.

The region has seen many ferry project concepts by potentially interested investors come and go¹⁸. These have included:

1. Caribbean Rose: In August 2008, a new ferry service was announced originating in Trinidad to travel a route to include St. Lucia, St. Vincent and Barbados but did not materialize;
2. In 2010, a Grenada-based project for a regional ferry service, planned to acquire a large vessel with accommodation for 900 passengers, 175 motor vehicles and cargo to connect the islands of Barbados, St. Lucia, Trinidad, Grenada and St. Vincent with daily services. The vessels, Ex-Statens Island ferries, were unsuited to Caribbean marine conditions and were not purchased;
3. In September 2010 Trinidad and Tobago's intention was to launch a ferry service linking Trinidad and the Eastern Caribbean. Five companies responded and Fast Ferry Caribbean Ltd was selected. This Barbados-based consortium wanted to chart a 112-m wave-piercing catamaran similar to those operating on the Trinidad to Tobago route but the project failed

16 <https://www.bviwelcome.com/ferries.php>

17 <http://www.stkittstourism.kn/explore-st-kitts-getting-around-ferry.php>

18 *Driving Tourism in the Eastern Caribbean: The Case for a Regional Ferry*

to secure subsidies it asked for;

4. The Grenada Government is seeking investors for a fast ferry service among the Eastern Caribbean islands. Two fast catamaran-type ferries are proposed, with a capacity of about 200 passengers, as well as 10–15 vehicles.

Ferry projects seem to fail because sea conditions in the Eastern and Southern Caribbean seas are rough particularly during the winter, requiring expensive vessels with stabiliser systems. There is also a lack of clarity whether operations are to be exclusively for passenger use, or for a mix of passenger and freight services. Furthermore, a potential regional ferry system faces the challenge of untried routes, high operating costs and limited ability to pay on the part of the travelling public. None of the participating governments have thus far been willing to commit subsidy funds to a regional ferry project.

A review of regional ferry fares by the World Bank in 2014 found that the average fare for ferry travel in the Eastern Caribbean was US\$ 1.06 per nautical mile, about 57 per cent of the fare cost on LIAT's regional air routes. However the *average* cost included extremes - of a low of US 9 cents per mile on the subsidized Trinidad- Tobago RoRo ferry service - to a high of US \$2.71 per nautical mile on L'Express des Iles19 service between Martinique and St. Lucia. The study concluded that ferry tariffs vary (widely) per country depending on the route, distance and operating costs and recommended further research.

Maritime cargo market

The Caribbean's location at the crossroads of global container shipping routes gives the region excellent maritime connectivity that could translate into significant commercial opportunities. 15% of containerized global merchandise trade passes through the region by virtue of its proximity to the Panama Canal and the major markets of the east coast of North and South America. Given its heavy dependence on trade, Caribbean authorities are increasingly vested in improving the efficiency of supply chains and addressing issues related to maritime transport and logistics²⁰. The projections show a continued concentration of transshipment services in a small number of principal hub ports (in Jamaica, Trinidad, etc).

An international and generally accepted *good practice* measure of (marine cargo) connectivity is the Liner Shipping Connectivity Index (LSCI)²¹, a composite measure of shipping services and port capacity. In 2013 Antigua and Barbuda ranked 150 on the world list²². Some rearrangement of feeder services is expected as a result of increases in (container) feeder volumes. Currently, niche

19 A fast ferry has been defined as a ferry that travels faster than 25 knots per hour.

20 *Caribbean Regional Action Plan on Freight Logistics, Maritime Transport and Trade Facilitation*, coordinated by Krista Lucenti, IADB December 2014 Technical Note No. IDB-TN-712

21 UNCTAD (2013) Liner Shipping Connectivity Index. www.unctad.org

22 Montserrat Little Bay port was not on the list

operators carry out third-party feeder in the Caribbean, such as Seaboard Marine, Crowley²³, Bernuth, and Tropical, with more traditional feeder services being offered by Caribbean Feeder Services and X-Press Feeders.

Caribbean countries have been historically net importers, with important deficits in their current account balances. This implies that anything that can reduce the cost of key input factors to the economy is a top priority. The import/export balance largely determines maritime tariffs. In cases where import and export flows for each type of maritime service are more balanced, tariffs will be lower on average than where there exists a gap. In Montserrat, roro traffic is dominated by imports; containers are imported full and are subsequently exported empty, a fact that is unlikely to change soon.

Making small island freight services commercially viable requires the use of vessels with low initial and operating costs which have the freedom to operate outside of conventional ports and with minimum customs, security, and trade facilitation formalities. Conventional (service) ports have high charges, high safety and security requirements and congestion. As a means of reducing costs, Montserrat has the possibility of developing a small port with lower infrastructure costs or charges, less demanding security arrangements, more friendly trade facilitation measures (particularly customs), and little congestion.

While the Caribbean economies are highly integrated with the global economy, customs performance is lagging behind. One clear pattern is that OECS customs offices are physically examining almost all entries, a practice far removed from trade facilitation best practices. This is likely the response to a widely accepted practice of overtime pay that sets out a distorting incentive structure.²⁴

Airline passenger market

The airline industry in most of the world is a very low-margin business. Caribbean countries are characterized by an inter-continental air passenger capacity that is much higher than the intra-regional and domestic markets. The CARICOM Region, stretching from Belize in the West, to Bahamas in the North, and to Surinam in the South, does just not have the density of population required to support the high-cost/low-price demands of air transport. The air market is relatively small, driven by international demand originating outside the Caribbean, and growing steadily at about 2% p.a.

Within the Caribbean, mainline international (first tier) airlines such as BA, American Airlines, etc. rely (normally without any formal cooperation) on the smaller second and third tier carriers to provide access to smaller gateways and destinations. Such first tier airlines held 75% of the market

23 Currently serving Montserrat with liner RoRo vessels based out of Christiansted, St. Croix.

24 *Connectivity for Caribbean Countries An Initial Assessment*, World Bank 2014

(measured by RPK mn) in 2013: second tier carriers (regional carriers such as LIAT) held about 25% and third tier (local such as SVG, Montserrat Airways) carriers less than 1%, due to their very short route distances.

A fully implemented and liberal air policy in the CARICOM Region is not yet in place and the scope for an increase in carriers on thinner intra-CARICOM markets is rather limited²⁵, though liberal horizontal agreements with third party states such as USA, Canada and Europe, *might* see an increase in carrier choice and connectivity.

The ownership structure of the Second Tier Carrier LIAT is more diverse than for other state-owned carriers based in the Region, with as much as 11 separate Caribbean governments having at least a small stake in the carrier. The main shareholder governments are Barbados, Antigua and Barbuda, and St. Vincent (together holding 92% of all shares). LIAT has suffered from years of financial and operational difficulties, (at one stage having accumulated debts of XCD311 mn), which it has tried to address by restructuring. In 2013, the carrier embarked on a fleet modernisation programme in an attempt to improve cost and operating performance. Further cost-cutting measures have already started to take effect, including reducing the fleet by two in 2015 and making capacity cuts across significant parts of the network with the potential for some voluntary and/or involuntary job losses. LIAT's executive team and regional government stakeholders struggle to balance the conflicting objectives of making LIAT financially viable, while ensuring the carrier's many dependents continue to capture value from the continuation of its services²⁶.

Smaller regional (third tier) carriers play a significant role in plugging the gaps between islands not served by the larger carriers. SVG Air and other third tier carriers like it play an important feeder role across the Region, providing the requisite flexibility and frequency to enable scheduled access capability for residents and tourists (Innovata, 2013). A current success factor for air connectivity in Montserrat is that it is well-served by two experienced Third Tier carriers linking it to the hub airport on Antigua. However, faced with such thin markets, it is an economic reality that few carriers are able to make a commercial success of running scheduled air services in the CARICOM Region.

Because air travel in the Caribbean region is price elastic, an increase in price would likely lead to a more than proportional decrease in demand. On intra-CARICOM routes, taxes and fees can also be disproportionately high. A return trip Barbados-Antigua, for instance in February 2015, was made 34.5 % more expensive through additional taxes and fees. In general an increase in airport fees and taxes would likely result in a decline in passenger numbers.

25 *Making Air Transport work better in the Caribbean*, Caribbean Development Bank, May 2015

26 LIAT, a dominant player in the regional airline market in the Caribbean, has no interlining capabilities, meaning that passengers arriving on one of the long-haul airlines from the outside, e.g. American Airlines/British Airways, would have to claim their baggage and re-check it at the LIAT check-in counter after having gone through customs. The First and Second Tier networks are, in effect, separate, and have different purposes.

3.3 Lifeline route operating conditions

The conditions on the sea and air crossings are described in turn below.

Sea route (crossing) conditions

The sea route conditions between Bryson's Pier in Antigua and Port Little Bay in Montserrat are of great importance for the management of the lifeline ferry operations. The hurricane season, which extends from June to November each year can have a significant impact on sea conditions. In addition, there are high waves in winter resulting from storms in the North Atlantic Ocean, and known as swell waves, or locally as 'groundseas'. There is a sheltered harbour at Antigua but no sheltered harbour at Little Bay, and on occasions the ferry service cannot run or dock. If the ferry goes in on the inner berth at Little Bay in winter, there is commonly wave action against the ferry.

The Captain sails according to the weather forecasts: if the wave conditions at Little Bay are less than 9 foot (3m) it is expected that the ferry will come in and berth. Wave action at Little Bay has been known to break out the storm posts – so Captains are operating within a margin and can occasionally catch a ghost swell, which can damage the ferry. The direction of the jetty should absorb the swell tops.

The distance between St. Johns and Little Bay is 29 nm in a south-westerly/ north-easterly crossing direction²⁷. For the purposes of the organisation of the lifeline ferry route, of note is a marked difference between summer and winter sailing conditions and also between the conditions on the northbound sail (towards Antigua) and the southbound sail (towards Montserrat). Although sea conditions can be smooth on the crossing, there may be waves of 1.5-3.0 m all year around.

On the northbound route, there are problems into the first quarter on the exit from Montserrat where the ferry rounds the Northwest coast of Montserrat exits the Caribbean sea and comes up against the cold Atlantic Ocean water in the Channel, especially between November and April. Passengers and ferry can experience no weather for the first period of the traverse but then can meet 15-foot (4.5 m) swells there during winter. Locally the choppy location is known as *Yellow Hole* - a large proportion of passengers fall ill there. Usually the 5-9 foot (1.5-3.0 m) waves are experienced during winter months with north seas, according to weather conditions. For the comfort and security of the passengers and crew a larger ferry vessel needs to operate in the winter months. On the southbound crossing from Antigua to Montserrat, the ferry vessel is 'running with the waves', hence the crossing experience is generally more comfortable. As traffic builds on the route, the crossing may require two different vessel types: a smaller ferry for the summer period, when seas are smaller, and a larger ferry for the winter period to cope with large swells and increased wave action. Fortunately, a seasonal change of vessel size would correspond quite well

27 It is comparable in distance to the northerly sea crossing; between Antigua and River port Barbuda, which is rougher.

with the peak seasonal demand, as larger volumes of passengers wish to use the ferry around the long Christmas and St. Patrick Day holiday periods.

Lifeline ferry *crossing times* depend on the route selected, the sea conditions, as well as the type of ferry vessel in operation and the Captains preference²⁸. The average ferry crossing time from Port Little Bay to the buoy in Antigua²⁹ was usually an hour and then it could take another 15-20 minutes to berth, as no wake is allowed inside the Antiguan harbour approaches. Sometimes, queuing up behind cruise vessels proceeding into Port at Heritage Quay, leads to longer crossing times.

Adverse sea conditions on the crossing and alongside the port in Montserrat have imposed significant limits on the ferry service and port operations at Little Bay during winter. Operations have been cancelled on several occasions due to stormy conditions. Cancellations affect passenger confidence in the reliability of the ferry service. The absence of a suitable breakwater and thus the exposure of the berth to the open sea have not only negatively impacted the sustainability of service but have also affected potential for growing the day-tour market.

The Maritime SAR Rescue Coordination Centre is based in Martinique. Antigua has a coastguard but reportedly no search and rescue capacity. The Montserratian Police have a single small launch with a capacity of six passengers. This vessel is inadequate and cannot put to sea in stormy conditions, hence there is a need to build search and rescue capabilities. A Maritime Emergency Plan is being worked on and is expected to be finalised by the end of 2016. The plan should be in accordance with a standard (such as IMO) and there should be sustainable training provided to support the plan. Equipment is needed as well as additional resources, e.g. personal protection equipment, team equipment (lights), etc. The Montserrat DMCA also requires additional support. For example, Communications Channel 16 is used for point-to-point communications but because of poor radio reception, a radio booster or an extra communications tower is needed.

Air route conditions VC Bird Airport Antigua – JA Osborne Airport Montserrat

Montserrat lies in the trade wind belt and has sites that have 12-15 mph wind speeds for most of the year. Although localised cross winds have been identified as an issue at VC Bird, the short 36 nm over-sea crossing³⁰ to JA Osborne airport on Montserrat is predominantly straightforward, with local issues of turbulence and wind shear recorded on approach to the airport in Northern Montserrat, which is hilly. Aircraft flying from Antigua to the north east of Montserrat can opt for a normal pattern approach during common prevailing easterly winds. The downwind pattern can be flown to the south, north or over the runway, before turning and aligning with the glide path for

28 If seas are rough around Little Bay, a Captain may take a longer route (westward) in the first quarter to reduce passenger discomfort. Fuel costs for fast-ferry operations are expensive; a Captain may sail at a slower rate of knots to conserve fuel.

29 On the *Caribe Sun* ferry service. [Vessel of 2.5 draught and carrying capacity of 200 pax. maximum (normally 150-175 due to baggage)].

30 The flight time is about 15 minutes.

touchdown. Based on the results of the wind analysis, it appears that flying the downward overhead pattern would be favoured because of the wake generated by the ridge. Apart from being in the influence of the wake, this will also provide clearance from the ridge³¹. For aircraft taking-off at JA Osborne airport on RWY10, the small valley at the eastern side of the runway will result in localised slight decrease in headwind with a short small drop in lift.

For the majority of the flight traverse, aircraft are under the control of Antigua airspace controllers, with handover to the control tower at JA Osborne Airport on approach, a short distance from the airport.

Aviation safety and security is regulated by ASSI, an executive agency of the UK Department of Transport set up for the Overseas Territories. An Airport Emergency Plan exists, but there is neither any national Search and Rescue Plan nor any capability to attend to an aircraft or maritime incident off island.

3.4 Terminal conditions

A description of the terminals on the maritime and air transport routes is provided below.

Ferry terminals: lifeline ferry route

The current jetty was built originally as an emergency facility and was intended to be temporary. This infrastructure is open to the sea and with no breakwater it has no protection from adverse sea conditions. Such adverse sea conditions are experienced for more than six months of the year, during the peak tourist season and periods of major events which attract travel to Montserrat, namely Christmas, Festival, St. Patrick's Week and Easter. Cargo, cruise and ferry traffic are all severely affected, sometimes for weeks at any one time. The unsafe situation that results militates against port operations, the sustainability of sea access and the economy.

The seaport comprises a finger pier (jetty). It is earmarked for redevelopment to meet the cargo and passenger traffic needs of Montserrat well into the foreseeable future. However, due to deficiencies in the initial design, this redevelopment is not likely to materialise soon. At some stage it is likely that there will be a redesign to ensure it will be '*fit for purpose*'.

The absence of appropriate seaport infrastructure, principally a breakwater and adequate quay length inhibits safe, reliable and efficient ferry and other vessel operations all year round.

Problems alongside the port in Montserrat have been significant militating and limiting factors for the service and port operations. This occurs for more than six months yearly. Operations have had to

31 Aeronautical Study of JA Osborne Airport, Mott MacDonald, 2014.

be cancelled on several occasions due to those conditions. This affects passenger confidence in the reliability of service and creates concerns for the quality of the service. Recently, on three different occasions, scheduled cruise vessels could not come into Little Bay port because of heavy swells, leading to loss of tourist revenue, negative publicity about the service, etc.

Traffic activity at the Little Bay Seaport is very low; the berth availability ratio is therefore very high. Passenger ferries, although quick in disembarking/embarking passengers may remain at berth until they are ready to depart for the return trip. This is due to the low demand for berthing space.

The existing terminal at Little Bay was built quickly without consideration of customs and immigration requirements. This can therefore result in operational problems during peak periods. There is no separate screening area. If a Customs official wishes to look closely at a passenger's baggage at the Little Bay facility, he/she must do so in full view of all arriving/departing passengers. Since the facility is small, normal operations work reasonably well but processing problems can arise when a large party of ferry passengers arrives.

In Antigua, the situation is completely different. The terminals (berths) are generally sheltered and do not experience the same conditions that Montserrat does. Presently Antigua has two possible berthing locations in St. John's for ferry services i.e. the Deep Water Harbour and at Heritage quay. Heritage quay is a dedicated cruise-ship port. In keeping with the undertaking by the Government of Antigua & Barbuda to facilitate a previous ferry service, it has allowed some modifications to a section of the berth at Bryson's Pier for the accommodation of the service. Along with those modifications were very strict requirements regarding ferry calls at the port, the embarkation/disembarkation of passengers and baggage/cargo. Most recent lifeline ferry services have utilised the Bryon's Pier facilities. Due to complaints about the amount of space available for the processing of inbound and outbound ferry passengers tour operators on Antigua reported several on-going improvements in passenger handling facilities. Firstly, inbound (to Antigua) ferry passengers will be segregated from outgoing (Montserrat bound) ferry passengers. There is considerable space allocated for outgoing passengers in a combined lounge and processing area at the shore end of the pier. This is expected to considerably remedy the earlier situation where the two streams of passengers were located in close proximity. The arrangement is likely to assist processing of inbound passengers who will have more space to queue on the quay for immigration and customs checking. An additional ticket booth would presumably be provided. Notwithstanding the new arrangements however, the available space for processing of inbound passengers appears to remain quite congested, and this situation may be exacerbated at peak passenger handling periods.

The close proximity of the Bryson's pier berth to the adjoining Cruise liner berth is of substantial potential benefit, because if cruise ship and Montserrat ferry timetables could be well integrated, it would create an Antiguan cruise ship day-tripper tourist ferry market for Montserrat, without much effort. Cruise vessels have fixed arrival and departure times (arriving early morning at the Heritage Quay and departing in the evening). The ferry service must however leave Antigua punctually at 9.00 a.m. and must leave Montserrat punctually at 17.30 p.m. for the services to become seamless and

well-integrated³². Furthermore and perhaps of even greater potential for Montserratian tourism³³, tourists staying on longer-term holidays on Antigua have easy access to the centrally located pier at Heritage Quay. They would only require a safe and regular inter-island ferry service between Antigua and Montserrat to be able to plan day-trips to Montserrat. People going on a day-tour need to be treated well and be exposed to a minimum level of bureaucracy.

Maritime cargo terminals

The absence of a suitable breakwater and thus the exposure of the berth to the open sea have likewise restricted the sustainability of RoRo operations at Little Bay. It is likely that the other RoRo end points- at St. Maarten, Tortola and elsewhere - do not have similar cargo port conditions. Present RoRo and other cargo operations are straightforward, although the cargo shed is a little cramped as it was constructed during the emergency period, as a temporary facility. There is a container-parking yard but there are no plug-in points for refrigerated containers (commonly known as *reefers*) at Little Bay Port.

Airport terminals: lifeline air route

The lifeline air transport connection to VC Bird airport in Antigua is particularly important for Medevac and other emergency transport requirements. Existing airport runway utilization is low. Two main types of aircraft servicing the airport are BN Islander and DH Twin Otter 300 series. Both aircraft types have STOL capabilities (short take-off and landing capability).

The John A Osborne airport is a relatively new facility. Due to its physical and natural characteristics, the maximum size of aircraft which can operate safely at the aerodrome is the DHC-6 Twin Otter³⁴. The airport has a number of limitations including a short runway, significant precipices at both ends of the runway, obstacle limitation surfaces (*Lookout hill*) and other natural constraints present challenges for operations, growth and expansion. In addition, the airport is constrained by its current 'daylight only' operating certification.

During volcano related crisis periods, the airport operating hours could be extended into the evening. At present, recreational diving operations take place during the day on Montserrat. The local tourist industry cannot offer night diving because, in case of medical emergencies, medical staff would need to take injured divers via a night-time medevac service from the airport to a hyperbaric chamber off-island. The VC Bird hub airport Antigua has a new state-of-the-art \$97 million terminal servicing large passenger flows, and is well connected with long-haul flights.

32 Antigua Tour Operators noted a lack of punctuality with the lifeline ferry service that resulted in major challenges for organizing tours for Antiguan cruise ship passenger day-trippers to Montserrat.

33 And lifeline ferry occupancy level/ load factor.

34 BN Islander: Pilots 1, Payload: 1, 700 lbs., Normal Capacity on route 6 pax. DH Twin Otter: Pilots: 2, Payload: 3,200 lbs. Normal Capacity on route 16 pax.

3.5 Service conditions

A description of the service conditions on the maritime and air transport routes is provided in turn below.

Maritime Transport Operations

This section firstly describes current route passenger operations and then landside interface arrangements for passengers at each end of the route. It is then followed by a description of the current marine cargo operations, with a short description of other traffics (yachts and cruise ships) provided at the end.

A: Route Passenger Operations

Passenger lifeline route: ferry operations

Past and current ferries have not been optimal in terms of their technical and operational characteristics³⁵ for the sustainability of ferry operations. There is a need for significant improvements in the quality, range and reliability of the ferry service. A ferry is the major component of an emergency evacuation plan for Montserrat as it is the only means by which more than 100 people can be evacuated at any one time, should it become necessary to do so³⁶.

There are eighteen uniformed customs staff on Montserrat in total, of which six are employed at the borders. During peak periods, Customs and Immigration staff are assigned in a joint unit of twelve members at the borders, through calling in those off work. For arriving ferries, an advance copy of the passenger manifest is provided by the handling agents in Antigua so the C&I are aware in advance of the passenger-handling requirement.

Passenger lifeline route: accompanied cargo operations

A regular ferry service can assist the growth and development of the small entrepreneurial, agricultural and business sectors by providing capacity to carry cargo; trade in fresh produce, meats and fish, and contribute to the attractiveness of the island for investments in all the economic sectors³⁷. There are many different types of cargoes carried on ferries worldwide. The first type comprises traveller-accompanied baggage. Usually small vessel and ferry personal baggage

35 Size and design to provide comfortable sea journey experience; suitable ambience to cater to the huge tour markets in the sub-region; suitability of engine types, spare parts availability and capacity to maintain them; operational efficiency for journey time and cost; and a limited cargo capacity.

36 This could be arranged however as a type of contingency contract with a ferry on a different route.

37 Currently GoM is subsidising a weekly small cargo ship between Antigua (Bryson's Pier) and Montserrat (Little Bay) whilst the ferry has been out of service.

allowances are generous. This is often a reason why island dwellers prefer to take ferry transport rather than air transport; they can undertake small day-trading business at reasonable cost through utilising relatively large personal baggage allowances.

The second type of cargo has historically been small palletised (LCL) mixed cargo loads and other high value low-volume goods including fresh meat and fish, carried on unaccompanied basis and subject to normal Customs processing via the Customs shed. In the past lifeline ferries have carried a limited amount of palletised cargoes and have consequently been equipped with an on-board ships crane.

The type of cargo carried depends on vessel configuration and capacity, the ferry journey time, sea roughness and many other different factors.

Furthermore, the larger type of ferry vessels (RoPax) can carry heavier cargo loads such as cars and full containers.

Landside transport arrangements for arriving and departing ferry passengers

There is a designated taxi area at the ferry terminal at Little Bay and a dispatcher system being installed. The Taxi Association has thirty-six registered members, however there are also a large number of unregulated taxis in operation on Montserrat (perhaps an equal number to the registered members). Hence appropriate measures should be taken to ensure the safety of incoming ferry passengers who travel onward by taxi to their final destinations on Montserrat.

The landside transport arrangements for arriving and departing passengers at the Bryson's pier Ferry terminal on Antigua are relatively well-organised, however the car parking/pickup and drop area appeared congested.

B: Route Cargo Operations

The main route cargo operations are for RoRo operations (containers and vehicles) and for liquid bulk (fuel) traffic operations, both handled at Little Bay, at different locations. These are described below.

Cargo lifeline route: RoRo operations

Basic maritime freight services are being provided at the Little Bay wharf for several liner traffics including containerised and reefer cargoes via RoRo. Handling is via tractor unit from wharf to nearby trailer park yard. One mobile crane is available plus a 'vintage' top spreader. The existing marine cargo operations are basic and current port throughput, which is heavily import-oriented,

low. Numerically, the existing shipping primarily comprises of vessels less than 5,000 GRT, although a significant proportion of vessels calling are in the 1,000 to 5,000 GRT range. There is a need for significant improvements in the quality, range and reliability of cargo services; however, these are likely to occur organically once a breakwater has been constructed at Little Bay Port. Although existing (mainly RoRo38) cargo operations are not particularly efficient, the present methods of working are appropriate considering the low levels of throughput (full containers inbound and empty containers outbound). The only official port of entry is at Little Bay, there are standard fees for normal cargo processing, with additional fees for after hours service. Depending upon advance payment, reefers can be cleared at supermarket locations in Montserrat using the AYSCUDA customs system. The supermarkets require hard-standing for the 20' containers, as well as electricity supplies for reefer plug-in points.

Cargo lifeline Route: other Liquid Bulk/Dry Bulk operations

The island's bulk fuel storage is located at Carr's Bay, where Delta Petroleum has a fuel storage depot. Visiting fuel tankers (about three per month, vessels of up to 5,500 GRT) are moored in Carr's Bay and fuel is hosed in from the offshore mooring point, via a floating pipe. There are three primary fossil fuel energy imports: *Cooking Gas* (Liquid Petroleum Gas) for domestic consumption in cooking appliances, *Diesel* for heavy vehicles, the ferry, and for the generation of electricity: DSL, and *Gasoline* (petrol for cars and light vehicles: GSL). Delta Petroleum Limited imports all of these fuels onto Montserrat. Sales in 2014/ 2015 were fairly consistent at LPG 165,000 Imperial Gallons, DSL 1,200,000 Imperial Gallons and GSL 750,000 Imperial Gallons. Due to fuel storage facilities, liquid bulk shipments can be timed to avoid hurricane periods.

Large vessels, such as tankers and cruise ships, can discharge pollutants within island waters, which could be hazardous to marine life. Hence such traffics require monitoring by the Port for compliance with IMO and other standards (for oil spillage, bilge flushing etc.).

Current operations at Plymouth are on the basis of an exceptional lifting of the exclusion zone entry and exit conditions under direct oversight and management of the MVO. Exports of dry bulk cargoes (sand) are being handled in a combination of tug and barge operations located at the Plymouth wharf. Sand exports appear to have reduced. There are reportedly occasional vessel calls at Plymouth by larger dry bulk vessels. The approach channel at Plymouth has current depth of -18.0 to -21.0 m. Current depth at the southernmost area of the berth lies between -5.8 to -8.5 m. Planned maintenance dredging is to take the northernmost part of the maintenance dredging nearest to the shore to -5.8 m.

Other marine craft: cruise ship and yacht handling operations

Yacht handling arrangements at Little Bay are simple, with relatively low traffic volumes. Police and fisheries patrol a 12-mile zone from the island's shores. If cruise ship or yachts sail within the 12-mile zone they operate within the GoM area of responsibility. New regulations for the customs controlled

38 Operated on Crowley relay services out of St. Croix (vessels *Ocean* and *Weisshorn*).

area in Montserrat have been promulgated during June 2016. Little Bay remains the Port of Entry; approved vessel mooring locations have been indicated on the plan.

In the past there has been a lack of effective passenger control for visiting cruise ship passengers. Normally the shipping agent would specify the requirements to meet cruise ship or ferry passengers and would then contact the Taxi Association to arrange for transport³⁹. Some coordination problems have been identified in the organisation of land transport services for occasional cruise ship and visiting ferry passengers.

Air transport operations

This section firstly describes current route operations and then landside interface arrangements for passengers at each end of the route.

Passenger lifeline route: air transport operations

The airlines currently serving Montserrat (Montserrat Airways Limited (MAL) and SVG Air) do not have intraregional networks of services. They do not also have code share or interline arrangements with major regional and international airlines for seamless through travel to final destinations. The lack of seamless travel frustrates and inhibits the sustainability of access, growth in tourism and economic development.

The absence of such arrangements means that passengers are required to check into Antigua by going through Immigration, pick-up their luggage and clear customs upon arrival there. Then they go through the normal check-in process at the airline counter for their onward connecting flights. Emigration and mandatory security checks are then undertaken before entering the departure lounge to await their flights. The process above is a firm uncompromising requirement by the Antigua jurisdiction. Clearly, it is not expected to change as long as there is no code-share or interline arrangements to facilitate seamless travel.

Since there are a limited number of aircraft movements on Montserrat, senior customs and Immigration management consolidates staff resources. There are three customs staff and three immigration staff; however three people can undertake both services, leading to savings during quiet periods.

Notwithstanding present low air passenger volumes, there has been some criticism of the level of training of airport ancillary staff (in particular immigration officials, for not having a 'tourism friendly' approach). This is considered important; often the attitude of a border official is the first

39 The Taxi Association Members operate 17-18 buses of different sizes on Montserrat

'impression' that an incoming tourist gains about Montserrat. In order to promote tourism, the first contact with officials should be welcoming.

There is an air cargo warehouse from which minor revenue is derived and a minor volume of handling of accompanied baggage.

The airlines, by their very nature and capacity can easily withdraw their services and or change strategic direction that can potentially leave Montserrat without air access, at very short notice. This is not new and since 2005 Montserrat has experienced two service providers (WinAir and Carib Aviation) withdrawing their services at short notice.

Besides Antigua, St. Kitts has the potential to develop into another gateway for travel to/from Montserrat. Its principal value is in providing some (alternative) direct international connections. For regional travel, it will not serve any useful purpose since it too depends on Antigua for regional connections. The development of St. Kitts as a potential gateway for seamless international connections will require effort and a purposeful tourism-marketing plan.

Currently, there are eight guaranteed flights daily at Montserrat, two incoming and two outgoing in the mornings and the same in the afternoons. As aforementioned, the airline operators are MAL and SVG Air and they operate 'low-cost' BN2 aircraft⁴⁰. The total available seats per flight averages seven which provide a daily total of 56 seats, of which 28 are incoming and 28 outgoing. Presently the average load factor per flight is low; load factors are below a minimum performance target of 70 %. These indications by themselves show that capacity has been adequate for existing demand. However, this demand has been largely natural. Over the period, there was no sustained promotional effort aimed at driving up demand from the principal gateway market, Antigua. It remains absolutely critical that to sustain capacity there must be viable demand. This can only be achieved realistically through growth in tourism demand. Tourism, however, is highly sensitive to price, type and quality of aircraft, quality of service, and quality of airport facilitation.

The two main aircraft types servicing the lifeline route are the BN Islander and the DH Twin Otter. After Fairey Aviation acquired the Britten-Norman company, its Islanders and Trislander aircraft were built in Romania, and then shipped to Avions Fairey in Belgium for finishing, before being flown to the UK for flight certification. In May 2005, Viking Air purchased the parts and service business for all the older de Havilland Canada aircraft from Bombardier Aerospace and since 2008, Viking Air has been producing its own version of the DHC-6 Twin Otter.

Landside transport arrangements for arriving and departing air passengers

40 Present traffic volumes do not yet justify use of larger aircraft types.

There is a designated taxi area at the JA Osborne airport located at the left side, although it seems not well delineated/marked. As yet, there is no taxi desk at the airport. This is a factor that *could* lead to security problems, as there are a large number of unlicensed taxis in operation on Montserrat. The landside transport arrangements for arriving and departing air passengers at the VC Bird airport on Antigua are well organised.

3.6 Overview of organisations dealing with Connectivity

The first section provides an overview of the entities currently involved in Access on Montserrat. Details of other bodies involved more broadly in connectivity are provided in the second section, sourced from the Montserrat Access Strategy. A notable feature of the ferry and air transport industries is the existence of international regulatory and compliance bodies, such as the ICAO and the IMO.

Entities involved in Access/Connectivity

Several of the entities that have been involved historically with the planning, provision and management of air and ferry Access/Connectivity on Montserrat have changed within the past decade. The public agencies (entities) involved in the current development and sustainability of connectivity include:

Office of the Premier;

Ministry of Finance, Economic Development, Access and Tourism;

TourismDivision;⁴¹

Montserrat Port Authority;

J.A Osborne Airport;

Customs & Excise Department;

Immigration Department;

Ministry of Communications, Works & Labour; and

Disaster Management Coordination Agency.

Key among the named agencies is the TourismDivision, as tourism development lies at the heart of the development strategy and is served by well functioning air and sea transport services. At the moment tourism marketing is outsourced to a US-based service provider.

41 See <http://www.visitmontserrat.com/>

The Montserrat Port Authority provides the sea access interface and manages the functions of the port (land and sea facilities). Sea access involves the accommodation and handling of both cargo and passengers and therefore must be managed and coordinated efficiently and effectively to ensure that one does not adversely affect the other.

The other interface is the J.A Osborne airport. Like the seaport, it provides for the accommodation of passenger and cargo traffic.

The Customs & Excise and Immigration Departments are two facilitation service providers working at the two principal border-crossing points (J.A Osborne Airport and Little Bay Port). Their functions, which are performed independently, generally impact the sector as a whole. They have internationally acceptable standards and practices to which they conform.

The Ministry of Communications & Works is the umbrella Ministry responsible for the airport and seaport development. It is however largely oriented towards public works and infrastructure and did not have the institutional organisation to adequately accommodate Connectivity.

Ferry passenger and cargo operations and management

The maritime sector is segmented into maritime transport, ports and terminals and a maritime regulatory authority. For the purposes of the BCS, the main categories of relevance are passenger ferries and marine cargo. The passenger ferry category includes demand from domestic travellers on leisure or business trips as well as day-trip tourists. The marine cargo category is driven by domestic and regional transshipment demand. The cruise liner and yachting markets are non-captive tourism-based activities largely dependent on source markets. Each segment has various non-regulatory bodies relating to their trade and customer sectors and which actively promotes the common interest of their respective members.

International Regulatory Agency: The international body, which sets standards for safety and security of shipping and the prevention of marine pollution by ships, is the International Maritime Organisation (IMO). These standards are established in international conventions, which are ratified by independent member countries. To give practical legal effect to those conventions, countries must incorporate their provisions into national legislation and regulations and enforce them through state regulatory bodies commonly called maritime authorities or administrations. In some jurisdictions those bodies are also the ship registries.

Every ship (*cargo, cruise, yacht and ferry*) that is engaged in international voyages must have a registry. The registries set the requirements and standards for registration and ensure compliance. Port states are also responsible for ensuring that standards are satisfied when vessels are in their territorial waters and ports.

Regional Maritime Regulatory Agencies: Unlike air access, there is no OECS sub-regional maritime administration/authority. Each state independently determines its needs for a national authority and registry. The legislative provisions and practice in the states that do not have such authorities allow for Customs and the port authorities to exercise varying degrees of responsibility for maritime affairs.

In the case of Montserrat, there is no maritime administration/authority. The Customs Authority and the Montserrat Port Authority (MPA) variously perform some aspects of the responsibility of such a body. Montserrat does not have a ship registry. The cargo, cruise liner, yacht and ferry vessels which call Montserrat belong to foreign registries; some of which are in neighbouring Caribbean islands.

Air transport passenger operations and management

Industry Segments: The aviation industry may be segmented into aviation, airports and an aviation regulatory authority. Aviation comprises all means of transport by air. The two types of air transport are the fixed wing and rotary wing aircraft, which provide private and commercial passenger and cargo services. Airports are airfields with surfaced runways where aircraft may *take-off* and land safely and are equipped with facilities for handling passengers and cargo. Regulatory authorities are state agencies that are empowered by domestic legislation to oversee, approve and regulate civil aviation.

International Regulatory Agencies for Aviation: The international regulatory agency is the international Civil Aviation Authority (ICAO). This body establishes standards for the orderly, safe, secure, efficient and sustainable growth of the global aviation industry. The member signatories of the organisation abide by its minimum standards and recommended practices and incorporate them in their domestic legislation for proper and full legal effect. The UK is a party to ICAO (*Chicago Convention*) and by extension their obligations are applicable to Montserrat. The UK Civil Aviation Authority (CAA) through Air Safety Support International (ASSI) discharges the regulatory responsibilities and oversight in Montserrat.

The other major branch of the international industry is the International Air Transport Association (IATA). It is a trade body representing the interest of its member airlines and allied trade. Over 90 per cent of scheduled airlines worldwide are members of IATA but they do not all follow all the provisions the body agrees to. Current airlines, namely Montserrat Airways Limited (MAL) and SVG Air, are not members of IATA.⁴²

Regional Regulatory Agencies: The English-speaking independent states in the Eastern Caribbean have a single civil aviation authority, the Eastern Caribbean Civil Aviation Authority (ECCAA). Besides its OECS jurisdiction, it provides maintenance services to Montserrat for its airport's telecommunication and navigational equipment.

42 IATA Website - Membership List

The larger countries in the region have their own individual civil aviation authority. The Cayman Islands and Turks and Caicos have civil aviation authorities and are allowed to perform certain regulatory functions such as granting foreign operators permits within their capacity to do so.

As noted earlier the UK Civil Aviation Authority (CAA) through Air Safety Support International (ASSI) discharges the aviation regulatory responsibilities and oversight in Montserrat. The UK Department of Transport and its Air Accident Investigation Branch (AAIB) undertake specific responsibilities.

3.7 Access/ Connectivity coordination

Given the number of entities that need to be involved in some aspect of transport connectivity, in 2010 DFID funded the role of an access coordinator responsible for the implementation of an access strategy (MAS) for Montserrat. The MAS included short and long-term measures to improve access to Montserrat. Presently, there is no permanent organisational or institutional structure for the administration and coordination of Access/ Connectivity despite its integral role in all aspects of Montserrat's economic management agenda and development. However, recently, the responsibility has come under the direct control of the Premiers Office. In the past the Access Coordinator has had rather wide responsibilities including the following:

Ensuring smooth, safe and secure transport arrangements at the Port and Airport, particularly for passengers

Any inefficiency at the Port will inevitably be passed on in cost to the cargo and the passenger or in the quality of passenger facilitation. Neither is desirable and therefore to sustain Access/Connectivity the infrastructure must be appropriately designed; handling and facilitation must be efficient and services must be available to meet the expectation of the market. Present passenger and cargo handling operations remain unsafe during winter due to the lack of a protective breakwater. Some passenger handling problems have been identified, particularly during peak periods, for ferry passengers, yacht passengers and also for the passengers disembarking from occasional visiting cruise ships. A number of landside operational and management improvements have now become necessary.

J.A Osborne Airport, like the seaport, provides for the accommodation of passenger and cargo traffic. Safety requirements are paramount in its management and operations. Although present passenger and cargo handling operations work reasonably well, some passenger handling problems have been described and a number of landside operational and management improvements have now become necessary. (The specific role of the Coordinator is seen as managing and driving the changes that other parts of GoM (for example, customs, DMCA, MPA, and so on) are implementing).

There has only been a single senior Expert working in Access, previously located in a Ministry (MCW). Based on a review of available documentation/resources, it appears that the demands of the post were substantial (partly because the focus of the ToRs was wide), but also because the

senior Expert was housed in the MCW and did not have clerical support. (The main focus of the MCW has been on construction type activities and Access was not accorded a high enough priority in the past within that Ministry). Additionally, historically access/connectivity communications policy has not been well developed.

Coordination between GoM and operators and contract management has been poor. There have been no regular coordination meetings between the relevant parties. With the current air arrangement in place there are now weekly meetings between airlines and GoM and that helps a lot in addressing problems and bottlenecks. However this has been driven by Head of Procurement and not by the Access Coordinator.

Helping to support sustainable development of the tourism industry

In the past the Access Coordinator was assigned responsibility for ensuring that the port and airport incorporate sound business agendas and have competence in management to assist in facilitating the growth of passenger volumes. The success of the access function was seen as ensuring that the contributions of the port and airport working in tandem with tourism entities would enable growth in tourist passenger traffic. For a variety of reasons this growth did not materialise.

Helping to ensure seamless service provision at border crossings to boost tourism

The Customs & Excise and Immigration Departments are two key facilitation service providers. Their officers are the first points of direct contact with the Montserrat product for incoming passengers. The quality of their services matters enormously. The supply of capacity and demand will not be sustainable if the performance of those front line services is not in harmony with the overall agenda for access and development.

3.8 Connectivity conditions in other [Comparative Islands in the Caribbean and elsewhere](#)

3.8.1 Approach

An analysis of the connectivity conditions for a selection of comparable Islands in the Caribbean and elsewhere was undertaken (Annex 2) as means to identify lessons learned applicable for Montserrat, through connectivity experience elsewhere *under similar governance arrangements*⁴³. Within the eleven islands surveyed, there are two main categories of islands: islands located within a relatively populated hinterland⁴⁴ and islands that are extremely remote (such as St. Helena and the Falkland Islands). The islands within the Caribbean comparative sample include: Montserrat, Anguilla, Nevis, St. Barthélemy, Barbuda, BVI, Turks and Caicos Islands, Cayman Islands and Bermuda.

43 Governance arrangements in islands with historical links to European or the States are likely to have more market oriented and equitable connectivity policies.

44 The nine islands located in the Caribbean can all take advantage of opportunities in the tourism market.



3.8.2 Brief review of small island connectivity environments (including Caribbean islands)

3.8.2.1 Impact of remoteness and island population on air connectivity

The approach adopted for the provision of access/ connectivity is dependent upon the degree of remoteness as well as the size of an island's population. Thus, where an island or an island group's population exceeds some 30,000 persons (such as in Bermuda, the Caymans Islands and the Turks and Caicos Islands) there appears to be a much greater likelihood of long-haul *direct* flights being provided from the US and Europe. Where the population is less than this threshold, as in the case of Anguilla, St. Barthélemy, Barbuda, BVI and Montserrat, islands make arrangements to provide short-haul air services to nearby (long-haul) hubs.

3.8.2.2 Impact of natural harbours and island population

The provision of deep-water port facilities appears to be partly dependent upon the availability of natural harbours as well as the size of island population. Deep-water port construction is expensive, and costs rise if man-made harbour protection works need to be constructed. Thus BVI and Turks and Caicos have already constructed relatively deep-water cargo facilities, whilst Anguilla, Barbuda, St. Barthélemy and Montserrat with lower populations and more challenging port construction and marine protection environments have not.

3.8.2.3 Impact of population size and tourism development strategy on cruise ship terminal investment

The provision of separate cruise vessel facilities (which is not a component of the BCS) appears to relate more to the availability of private sector finance (as in the case of BVI and the Turks and Caicos Islands), in tandem with an Island's vision for how it wishes to cater to the *mass* cruise ship market, if at all. Interestingly, Anguilla's *mass tourism* (cruise ship) market strategy uses nearby cruise vessel hub facilities on St. Marten (with access/connectivity arranged by ferry from the cruise ship berth on St. Marten to/from the ferry terminal on Antigua)⁴⁵. A similar situation is indicated in St. Barthélemy, with St. Marten being the adjoining hub cruise liner port. The Cayman Islands tourism strategy caters to the *mass* cruise vessel market through provision of tendering from moored cruise liners to small shore berths nearby⁴⁶.

3.2.8.4 Impact of population size and sea crossing characteristics on ferry market development

The extent of the development of an Islands ferry market is most probably a combination of island population size, the distance from the nearby hub and the type of vessels that must be operated on the sea crossing. For short crossings in calm water, ferries built to lower specification can operate safely. Anguilla's ferry market is well developed due to its close proximity to the St. Maarten/St. Martin hub. Local businesses on Anguilla can invest in a fleet of smaller sized ferry vessels and

45 This is the suggested model/good practice for Montserrat.

46 There are concerns about reef destruction and oil spillage should a new deep-water cruise ship wharf be constructed.

provide higher route frequencies. A similar situation is indicated on Nevis, which is located in close proximity to the St. Kitts hub.

3.2.8.5 Impact of small land-mass and topography on transport connectivity infrastructure development

The small *landmass* of most of the OT islands can result in very expensive port and airport infrastructure development. This may be further complicated by topography; building airports on mountainous islands such as Montserrat, St. Barthélemy and St. Helena is costly due to terrain and the difficulty of locating sufficient areas of flat land in safe environments for runway construction. Hence an access/connectivity strategy developed for one Caribbean Island may differ considerably from an access/connectivity strategy developed for a second island situated within the same geographical area.

Rugged topography and small island landmass have an impact on the scale and design and characteristics of air transport infrastructure and air transport service provision, resulting in shorter more challenging take-off and landing conditions (as at Barbuda, St. Barthélemy and Montserrat) which require STOL aircraft capabilities.

3.8.3 Lessons Learned

It is noted that Montserrat's population is extremely small. Identification of Islands having similar access/connectivity conditions and population level is not straightforward. Some lessons learned include:

A threshold island population size to generate sufficient volume for long-haul direct flight connectivity appears to be around 30,000 persons. Below this, small islands normally depend upon short-haul connectivity to nearby hub airports;

Islands lacking natural harbours need to construct expensive port protection facilities, such as breakwaters, groynes, and so on. There is some evidence to suggest that islands with small populations and relatively low GDP postpone such major investment decisions until population and GDP rise about certain threshold values;

The burden imposed on small island populations to repay large investments in cruise ship terminals could be substantial. Furthermore, such large-scale facilities can prove difficult to operate with existing technical manpower on island, necessitating the import of skilled labour. SIDS therefore appear to carefully formulate their investment strategies and there appears to be a trend towards either offshore mooring and tendering arrangements for sound environmental reasons (Cayman Islands) or to ensure good short-haul connectivity with a nearby cruise ship hub (Anguilla's and St. Barthélemy's connections with St. Martin⁴⁷);

47 Anguilla's and St. Barthélemy's approach could be a good model for Montserrat.

Islands with low population will often seek short-haul ferry connectivity with a nearby deep-water port facility (as in the case of Anguilla, Barbuda and St. Barthélemy). Where sea crossings are long and conditions turbulent, ferries need to be dimensioned appropriately and fitted with stabiliser systems;

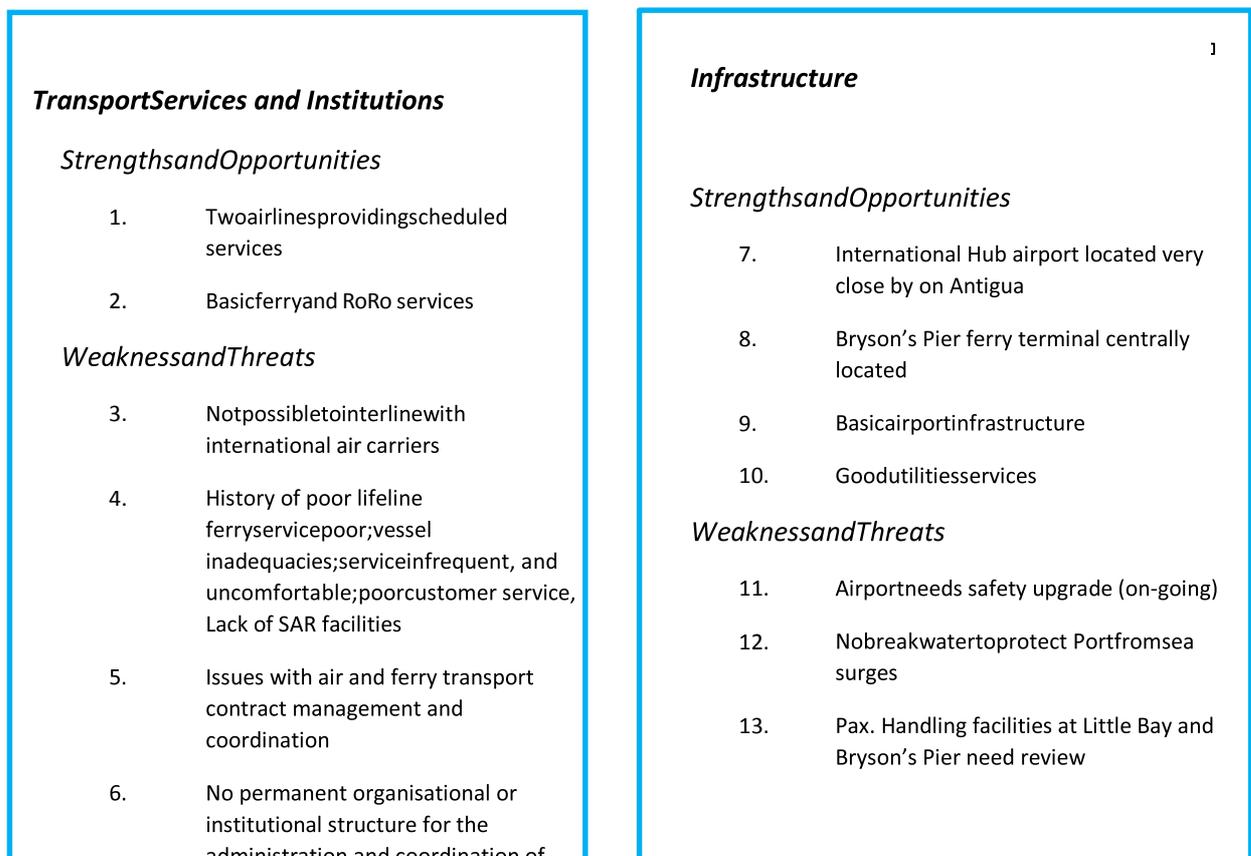
The small size of many SIDS and their (often) mountainous topography provide a considerable number of constraints on infrastructure development. Small islands, particularly hilly ones, simply cannot afford the heavy 'land-take' associated with the construction of large airports and long runways (which also require expensive obstacle clearance and/or marking, careful consideration of runways to minimise wind shear, and so on);

The small land-mass and hilly terrain equally affect aircraft capabilities, with airports on many small islands requiring the use of STOL capable aircraft.

3.9 SWOT analysis

In broad terms, Montserrat has some basic infrastructure to facilitate Connectivity albeit with major constraints. Those principal constraints and opportunities are summarised in the SWOT analyses below.

Figure 1 SWOT Analysis



3.10 Connectivity scorecard

Based on the analyses conducted in several important studies, including GOM's tourism masterplan, the previous Montserrat Access Strategy and others, it is possible to develop a scorecard for the current situation, as indicated in Figure2 below.

At a Glance score:

Green: The component performs fairly well overall: some minor improvements are needed.

Yellow: The component performs relatively well overall: improvements should be made.

Red: The component performs poorly overall, major issues identified: immediate and major changes need to be made.

Figure 2 Scorecard for the current situation

Current Situation: Connectivity Scorecard				
	Route	Terminal Facilities or Airfield Environment	Services and Operational Issues	Institutional Issues
Air Pax. Transport	Care: wind shear on approaches at JA Osborne Airport (Pilot training and Obstacle Lighting needed)	Some measures needed to facilitate pre-dusk/dusk operations and to permit exceptional night medevac	Issues with contract management; improvements needed in visitor handling at airport, communications and interline agreements. Measures needed to facilitate pre-dusk/dusk operations	
Sea Pax. Transport	Care: SAR arrangements; Emergency Evacuation Plan needed for route crossing	Unprotected operating environment at Little Bay (pax. handling facilities needed at Little Bay port and Bryson's Pier, commensurate with traffic levels)	Issues with contract management, e.g. poor data collection and management, performance management, quality and safety assurance	Issues in peak period passenger handling .Issues with air and ferry transport contract management and coordination
Sea Cargo Transport	OK, due to vessel characteristics	Unprotected operating environment at Little Bay		

section 4

Core elements of the Basic Connectivity Strategy (BCS)

4.1 Introduction

It is helpful to consider the core elements of the BCS, as well as the timing of interventions. This starts with the infrastructure needs assessment for the lifeline ferry and air transport routes, since the operational and institutional requirements depend on the key transport connectivity investments and the modal investment policy. The strategy comprises a combination of Government decisions and actions – implemented over a five to ten year period- as a guide for senior management to attain a sustainable and competitive market position for connectivity, to ensure smooth operations, making best possible use of scarce resources. The strategy is action-oriented and based on several practical considerations, not on assumptions.

4.2 Investment aspects of the BCS

Some background information and requirements help determine the direction and scope of the investment aspects of the BCS, with dominant themes of the adoption of a phased developmental approach and the introduction of built in stops for reviews and learning. According to the tourism

masterplan forecasts, and because of the shallow air and sea transport markets, traffic levels in the BCS start from a low base.

A description of the investment aspects for the maritime and air transport routes for the BCS is provided in turn below.

A: Maritime Transport Infrastructure

This section firstly describes ferry passenger infrastructure requirements at each end of the route for the BCS. It is then followed by a description of the marine cargo infrastructure requirements for RoRo and other traffics.

Ferry operations – lifeline route

The predominant passenger connectivity mode is the lifeline ferry connection to and from Antigua. In the BCS there are certain parameters for the ferry vessel design dependent upon the characteristics of the sea crossing, seasonality, but the focus would be on safety aspects (ability to withstand crossing conditions with a certain level of passenger comfort year round⁴⁸).

The lifeline ferry not only provides for access to services that are not available on island, in particular specialised health care and education, but is also an affordable way for Montserratians to buy and carry small goods from Antigua for personal use and small trading purposes on Montserrat. A ferry service can also provide emergency evacuation (a UK contingent liability).

Although in the past the lifeline ferry has been a relatively cost-effective way for businesses to get (small-scale) products in and out to the closest market on Antigua and has permitted the ferry owner to maximise profits from increased cargo loads during periods of low passenger demand, the requirement for passenger ferries to also have a substantial cargo carrying capacity is not yet fully established. There is a regular RoRo operation serving Little Bay Port with regular liner sailings for containerised traffic; traffic is almost 100 per cent import and containers are at maximum weight. In the BCS, it is not proposed that the life-line ferry service carry more than the regular passenger baggage and possibly has some capacity to handle a limited volume of palletised goods. An alternative to transport of palletised cargoes by ferry would be the operation of small dedicated cargo vessel(s) between Montserrat and Antigua serving this traffic. The schedule would not need necessarily to be more than a weekly sailing, depending upon demand. Ideally such a service would be market led, for example, provided without subsidy.

48 This implies passenger vessels of a certain minimum size equipped with stabilizers, etc. to ensure passenger comfort at least in the stormy period. Fast ferries between Antigua and Montserrat are not a BCS requirement.

Such facilities would include breakwater protection to permit safe operation of the ferry berth at Little Bay as well as (any) additional infrastructure/facilities needed to ensure the swift boarding and alighting of ferry passengers (based on average daily throughput volumes). Terminal and berth facilities should be provided at both ends of the lifeline ferry route that ensure 365-day passenger safety⁴⁹. An issue associated with the design of transport terminal facilities is that it is very expensive to design facilities for peak passenger loads. Clearly at certain times of the year, notably before and after Christmas and around the St. Patricks Day holiday, ferry passenger loadings are considerably higher than at normal operating periods. (For instance, the ratio of 'peak to average' day passenger facility throughput loading is high). Careful examination of monthly average passenger facility throughput will provide guidance on average monthly peak loads and 'special period' peak loads, in order to better assess space and other requirements. Depending on these calculations, it will be possible to assess whether the planned passenger segregation proposals at Antigua need modification and further investment. The available land area at the Little Bay departures/arrival hall is more extensive than it is near Bryson's Pier, however, the existing terminal arrangements at Little Bay may need revision, either to segregate passenger processing by direction, to provide shaded passenger waiting areas in case of downpours, and so on. The same survey and calculations procedures utilised at the pier area on Antigua may be followed at the passenger handling area at Little Bay to provide an assessment of future investment requirements.

The breakwater should be provided in a phased development programme that considers preliminary design and construction planning in more detail. For the BCS (first phase of the breakwater construction, the design parameters could be minimum design parameters ('3m swells' perhaps), with the second stage breakwater considering longer-term (climate change adaptation) design parameters as well as 1:100 storm protection. (A 1:100 year storm can occur at any time). Of vital consideration is the proposed breakwater fabrication method and design to achieve VfM. A combined composite caisson+ breakwater design could possibly involve basic fabrication at the Carrs Bay site or at another location at Little Bay, floatation to site and completion in-situ. Annex 4 provides further details. The BCS should include funding port navigational aids appropriate to each phase of the breakwater construction. Recent Studies (Emc2 and MARTEC/Lloyds Register) indicate that Little Bay would most probably be the safest and most sustainable site for further port development.

An examination of the Low Forecast adopted by the tourism masterplan for Montserrat indicates a GDP growth rate of 2 per cent p.a. which when translated into a lifeline service passenger and ferry vessel projection over the next 10 years indicates that the outer berth utilization at Little Bay would be in the order of magnitude of less than 20 per cent between 2017 and 2025. (The RoRo vessel docks end-on at the outer RoRo berth-at a different location in the port).

In the BCS some additional support could be provided at Little Bay for port operations (police cutter, fire and safety equipment, etc.) SAR capability in case of a lifeline ferry grounding or capsizing should be studied further.

49

It is noted that there could be limited periods during the Hurricane season when the ferry would not sail.

The main thrust of the Physical Development Plan for 2020 (PDP)⁵⁰ was to improve the current public ferry service and to design and implement a breakwater and port. Additionally the PDP considered that the port area should be redesigned to ensure the safe and efficient movement of passengers and freight.

Marine cargo operations - lifeline routes

In the BCS little additional facilities are suggested for maritime RoRo freight handling although there may be a case to support the Port Authority (PA) to invest in some new yard/shed handling equipment.

An examination of the Low Forecast adopted by the tourism masterplan for Montserrat indicates a GDP growth rate of 2 per cent p.a. (Annex 3). There is strong correlation of maritime freight with GDP growth. The existing dedicated RoRo berth utilisation is extremely low as calls are infrequent, weekly or fortnightly. When existing lifeline RoRo vessel calls are translated into a RoRo vessel projection for the next 10 years for the BCS, utilisation at the outer RoRo berth at Little Bay remains very low.

In the early part of the BCS, the existing jetty at Little Bay can continue to be used as it poses no restriction for RoRo services or conventional ferry vessel for foreseen traffic levels. The breakwater protection will permit year round RoRo cargo operations at Little Bay.

In the BCS, there will be time to consider the scale of new port development at Little Bay once the first phase of the breakwater has been constructed, although some preparatory steps may be advisable in the short-term.

Other marine Liquid Bulk/Dry Bulk traffics

No investment for operational support is proposed for marine freight (dry bulk, liquid bulk, containerised and RoRo traffics), which could take place either at private wharfs or at the public port.

Sensible use of Plymouth Port for marine dry bulk transport is proposed in the BCS- existing jetty and depth alongside (draught) needs to be safeguarded, after the proposed dredging in the port area to facilitate the off-loading of the heavy geothermal equipment has been completed. One immediate action at Plymouth port will be to provide fenders to avoid damage at berth.

In the BCS no change to the current liquid bulk transport arrangements is suggested other than possible investment in an offshore bulkhead, if required for safety purposes. Provision of an avgas

⁵⁰ National-Policy Final-Consultation-PDP, 2011.

supply to the airport should be considered. It is noted that energy imports may reduce in future at Carr's Bay, as a result of the geothermal energy plant coming on-stream.

B: Air Transport Infrastructure

This section describes air passenger infrastructure requirements on Montserrat for the BCS.

Air transport operations - lifeline route

Ample reserve airfield capacity exists into the medium term, as operators will be able to increase frequencies and seat capacity per flight. An examination of the Low Forecast adopted by the tourism masterplan for Montserrat indicates a GDP growth rate of 2 per cent p.a. which when translated into a passenger and aircraft projection over the next 10 years indicates that runway utilization would continue to be between 10 and 12 per cent to 2025. If the larger twin otter aircraft are operated, runway utilization could decrease in line with increased seat capacity/aircraft.

Consideration should be made in the BCS for the enhancement of facilities at John A Osborne airport in respect of (a) bad weather capabilities (b) extension of daylight period operations into dusk on an exceptional basis and (c) limited night-time operational capabilities (on an exceptional basis).

A review has been made of the JA Osborne airport study conducted by Mott MacDonald in 2014. A number of sensible suggestions have been made in terms of safety and provision of minor facilities and it is understood that some of these are being implemented. Annex 5 provides further details. The Physical Development Plan (PDP) for 202051 envisaged that the airport runway at Gerald's is sufficient to meet projected passenger movements in the plan period, but that the terminal building would need to be upgraded to increase passenger throughput, provide for CIPs, and improved restaurant facilities. In addition the PDP considered that the control tower should be relocated, possibly integrating it with the terminal building, and space should be designated for a commercial helipad.

As a much longer term provision, the PDP recommended that 200 acres of land be safeguarded for possible future airport development at Thatch Valley and Old Quaw; being the only option available in north Montserrat for the construction of a runway and associated infrastructure large enough to enable the operation of (larger capacity) regional aircraft to/from Montserrat. It was postulated that a longer runway to accept Dash-8 aircraft would allow Montserrat to be linked more easily into the wider regional air transport network in the longer term. The PDP acknowledged that for economic and medium term forecast travel demand reasons, the need for a larger airport would be unlikely to occur during the plan period but recommended safeguarding the land from alternative development to ensure that this longer term option remains possible.

4.3 Operational aspects of the BCS

51 Ibid.

Some background information and requirements help determine the direction and scope of the operational aspects of the BCS. A description of the operational requirements for the lifeline maritime and air transport routes for the BCS is provided in turn below. New operational requirements are noted, where relevant.

A: Maritime Transport Operations

This section firstly describes ferry passenger operational requirements at each end of the route for the BCS. It is then followed by a description of the marine cargo operational requirements for RoRo and other traffics.

Ferry transport operations – lifeline route

In the *Immediate Action Plan*, a new tendering procedure is underway for lifeline ferry transport services in which some innovative aspects of service provision are being tested and introduced. These requirements are based on a need to include MIS and performance management in contracts and to undertake risk sharing with the private sector, where possible. The new functions and procedures will need to be performed on a regular basis (see section 4.4). A small-scale study is recommended to determine the optimum lifeline ferry service vessel type and operational service characteristics, considering the annual demand and the sea crossing conditions.

Support to operational aspects of the ferry operation at Little Bay should be considered, in order to reduce *average* Customs and Excise and baggage handling processing times⁵². A proposal to introduce two lines for processing arrivals (visitors and residents) has been made. At the dedicated ferry facility at Heritage Quay in Antigua, measures are currently being introduced to separate and provide different facilities for the C&I processing of embarking and disembarking ferry passengers. Antiguan tour operators have noted that tourists coming from VC Bird international airport to the ferry are subject to two immigration checks (at the airport and at the ferry terminal) and have questioned whether a computer link between the airport and the ferry terminal could help speed passenger processing at the latter. At present on Antigua, cruise vessel passengers leaving liners at Heritage Quay for on-island day-trips are issued with an ID, which they use in lieu of a passport. In the BCS, Immigration officials on Antigua and Montserrat might jointly consider such a system for Antiguan cruise liner day-trippers to Montserrat. Furthermore, Immigration officials on Montserrat might wish to consider such a 'day pass' systems for visiting cruise liner passengers disembarking directly at Little Bay.

It is expected that the lifeline ferry operation will continue to permit handling of a small amount of palletised LCL cargo, since many Montserratian businesses will need to import and export this kind of small cargo. Alternatively, if a passenger-only ferry is engaged: cargo can move using a combination of existing scheduled RoRo services from the regional container hub together with small cargo ship operation (for palletised and general merchandise cargoes) to/from Antigua.

Marine cargo operations - lifeline routes

Core traffic at Little Bay Port comprises the ferry passenger service and the RoRo cargo services. The key to the protection of the existing ferry and RoRo traffics will be the planning and construction of the first phase of the breakwater at Little Bay. It is important therefore that a robust technical case is made for this *Public Good*, in order to secure CDB (co) financing.

Plymouth port “relief” cargo and passenger handling

Occasionally chartered ferry services may utilise Plymouth wharf (for example, Guadeloupe Express); organisational arrangements should be drawn up so that this sort of (tourist) traffic can be

52 Temporary increases in staff numbers would be needed at peak periods – perhaps around Christmas and the St. Patrick's Day holiday period.

accommodated. The legal status of Little Bay and Plymouth ports should be clarified. Plymouth port falls under the jurisdiction of the MPA hence if the sand and aggregate industry causes environmental issues at Plymouth (spillage of barge contents alongside the berth); operational arrangements should be in place for clean up at the expense of the port user.

Other marine traffic

Yacht traffic is managed by the MPA although not physically located in the main port area at Little Bay. This traffic needs to be properly managed (and serviced), ideally as private sector led development.

Liquid bulk traffic falls under the MPA and no changes to existing arrangements are planned. Better management of visiting cruise ship passengers is proposed. As cruise ships generally produce their own photo IDs, disembarking passengers could carry/wear such cards in lieu of a passport and it would be possible to set up a manifest check for anyone coming ashore.

B: Air Transport Operations

This section describes air passenger operational requirements on Montserrat for the BCS. In the *Immediate Action Plan*, a new tendering procedure is underway for lifeline air transport services in which some innovative aspects of service provision are being tested and introduced. These requirements are based on a need to include MIS and performance management in contracts and to undertake risk sharing with the private sector, where possible. The new functions and procedures will need to be performed on a regular basis (see section 4.4).

Although a subsidy will probably be required in the short-term for ferry operations, it would be preferable if basic aviation connectivity services remain unsubsidized at least for the tourist and business traveller segments of the market⁵³, since these travellers tend to be relatively affluent. A general principle of subsidy provision is that subsidies should be targeted at the 'not so well off'.

Although BCS envisages a single passenger ferry operator on the lifeline route, measures to encourage *two or more* scheduled air transport operators to service the Antigua-Montserrat lifeline route should be encouraged, *if possible*. The policy should consider trade-offs between competition and a shallow/thin market. Since the markets are thin and significant marketing and other efforts will be required to build traffic, it is likely that service subsidies will be required in the short-term to offer some market protection to fledgling operations. However, regular review and monitoring will be required.

4.4 Institutional aspects of the BCS

Some background information and requirements help determine the direction and scope of the institutional aspects of the BCS. Recently, the responsibility for the administration and coordination of Access/ Connectivity has come under the direct control of the Premier's Office, because Access plays an integral role in all aspects of Montserrat's economic management agenda and development. The two main elements of the institutional component supporting the BCS consist of

53 Subsidy allocations may possibly provided for Montserrat based urgent health and education travel purposes

important improvements in management and coordination of the Access/Coordination function and in connectivity strategy formulation and planning. The necessary improvements are included in the following two sections.

Management and day-to-day coordination aspects

The Connectivity function should seek to ensure that adequate ferry and aircraft seat capacity (supply-side) is available and must closely coordinate activities with the division in GoM, which has the overall responsibility for developing Montserrat's tourism market.

The Access Coordinator role would benefit from revision as follows: In the BCS, it would mainly be restricted to an (important) operational role only (see Annex 6). One of the key responsibilities of the Access Coordinator will be to draw up annual tactical plans to address connectivity coordination. This is not seen as a diminution of the existing office of the Access Coordinator⁵⁴; more of a concentrated focus on the key task: the appointment of clerical and communications officers is proposed to facilitate this work.

Now that Access/Connectivity and tourism development functions (offices) have been moved to the Premier's office, it is expected that access / connectivity will be better managed and information disseminated and communicated in a better way to stakeholders.

The office of the Access Coordinator will need to monitor GoM's service agreements through statistical and qualitative data provided by the service provider and other partners. He/She will need to collect data periodically through user surveys and to convene a partnership steering group, to include the service provider, meeting monthly to assess and discuss performance against the Service Agreement and business plan and to propose pre-emptive action, where necessary. The purpose of close monitoring and monthly meetings is to anticipate problems and put in place a solution to ensure that access/connectivity continues to run smoothly and that visitors and trade are not disrupted. This lead on regular coordination is expected to be a key part of the access coordinator role going forward.

Another key task will be to work in close collaboration with service providers to anticipate and resolve or mitigate problems before their consequences can be felt. He/She should draw up a pragmatic dispute resolution arrangement, including access to a neutral arbitrator, with assistance from the procurement team. The access coordinator will furthermore need to manage and drive necessary changes implemented by C&I.

Access strategy and planning aspects

54 Now conveniently located in the same building as the Montserrat Tourism Board, at Farara Plaza in Brades.

It is proposed that all policy and planning for connectivity infrastructure be handled independently from the Access Coordinator role, due to technical complexity. Ideally, GoM should fulfil the policy and planning functions. In the short-term this challenging task would likely require external expert or DFID support tapping into their internal technical expertise. In the longer-term, more sustainable arrangements would need to be considered.

section 5

Core elements of the Enhanced Connectivity Strategy (ECS)

5.1 Introduction

It is helpful to consider the core elements of the ECS, as well as timing of interventions. This starts with the infrastructure needs assessment since the operational and institutional requirements depend on the key transport connectivity investments and the modal investment policy.

5.2 Investment aspects of the ECS

Some background information and requirements help determine the direction and scope of the investment aspects of the ECS with dominant themes of the adoption of a phased developmental approach and the introduction of built in stops for reviews and learning. According to the tourism masterplan forecasts, and because of shallow air and sea transport markets, traffic levels in the ECS start from a low base but develop according to the forecast growth of the tourism market. There may be an opportunity to market Montserrat as the *Pompeii of the Caribbean*. Opportunities to develop day-tour markets in Antigua have been identified. A description of the investment aspects for the maritime and air transport routes for the ECS is provided in turn below.

A: Maritime Transport Infrastructure

This section firstly describes ferry passenger infrastructure requirements at each end of the route for the ECS. It is then followed by a description of the marine cargo infrastructure requirements for RoRo and other traffics.

Ferry operations – lifeline route and other new routes

In the ECS it is expected that the lifeline ferry service between Antigua and Montserrat would continue using the existing docking arrangements at both ends. Berth utilisation at the existing jetties is low, and in the case of the introduction of additional daily services, the foremost priority should be expended on reducing the time at the ferry dock through speeding up passenger processing, particularly for embarkation purposes. A logical next step at Montserrat would be to

provide landside facilities to separate embarking and dis-embarking passengers (as will be introduced at Heritage Quay in Antigua) in line with the development of the passenger traffic.

The current arrangement at Heritage Quay is not necessarily ideal. Consideration should be given to a proposal that perhaps GoM (via DFID) should purchase a purpose built passenger handling facility in Antigua, perhaps in the longer-term however this would be subject to a cost benefit appraisal at that time.

The basis for the expansion of ferry passenger services in the ECS is to provide connections with presently un-served regional locations that would help bolster the development of tourism in Montserrat. Possible new ferry Origins/Destinations (Guadeloupe, St Kitts, Nevis and Barbuda) are located within 50-100 nm of Little Bay Port.

In the early part of the ECS (short to medium term) there is likely to be no need to provide a different form of ferry berthing configuration at Little Bay with the first phase of the breakwater development, as ferry berth utilisation is low. In other words, the lifeline ferry operation and any new regional ferry services could share the same berth space. Such *non-lifeline route* ferries may include fast ferries or conventional ferries, but all would be unsubsidised operations.

An examination of the Medium Forecast adopted by the tourism masterplan for Montserrat indicates a GDP growth rate of 4.5 per cent p.a. which when translated into a lifeline service passenger and ferry vessel projection over the next 10 years indicates that the outer berth utilization at Little Bay would be in the order of magnitude of less than 20 per cent between 2017 and 2025. (The RoRo vessel docks end-on at the outer RoRo berth: at a different location in the port).

Ample reserve ferry berth capacity exists into the medium term, as operators would be able to increase ferry seat capacity (introduction of larger ferries) provided there is a protected mooring facility at Little Bay.

Concerns have been raised about the maximum size of cruise vessel calling Montserrat in future. There appears to be a view that Montserrat would not wish to attract the largest cruise vessels (of the 2,500-3,000 passenger capacity range) as it does not have the facilities on island to cater for a large influx of daily passengers and would not wish to cross-subsidise the construction of a cruise ship terminal for such a market. The tourism masterplan consequently forecasts a fairly small number of annual cruise ship passengers, on smaller size vessels.

Marine cargo operations - lifeline routes

In the ECS it is expected that berth facilities for liner traffic (RoRo) would be developed in line with the growth of traffic. Conventionally there is a close correlation between containerisation and

general GDP growth. The expansion of the main port facilities at Little Bay is expected to be closely related to the actual growth rate of containerised traffic (likely low) and the ferry traffic, which will be dependent upon the development of the tourism sector.

The Medium Forecast adopted by the tourism masterplan for Montserrat indicates a GDP growth rate of 4.5 per cent p.a.⁵⁵. There is strong correlation between maritime freight growth with GDP growth. The existing dedicated RoRo berth utilisation is extremely low as calls are infrequent, weekly and fortnightly. When existing lifeline RoRo vessel calls are translated into a RoRo vessel projection for the next 10 years for the BCS, utilisation at the outer RoRo berth at Little Bay remains low.

A review of the ECS should be undertaken in 2026 in particular looking at ferry and RoRo berth utilisation at Little Bay and the development of regional ferry connections.

In case of much increased berth utilisation in 2026, a phased berth development expansion programme would be proposed (incremental addition of additional berths when the traffic requires it). Such a phased port development programme would provide flexibility as well as affordability.

One important aspect that is common to both the BCS and the ECS concerns the strategy for breakwater development. In the initial phase, the breakwater is envisaged as providing safe year-round protection of the port (to counter the usual 3.00 m swells) thereby permitting a wave variation of +0.5 m at berth. The initial phase of the breakwater therefore will permit year round port operation at Little Bay and will provide a certain level of protection against larger storm events. The size and scope of a breakwater extension to provide greater storm surge protection needs further study.

Within the sheltered area the MPA can build on facilities they already have and develop these progressively to meet need. The approach can be more flexible.

Other marine traffic

Liquid bulk traffic and dry bulk traffic will continue to be located elsewhere (in the case of liquid bulks at the offshore mooring point at Carr's Bay and in the case of dry bulks (sand mining and aggregates), at the Exclusion Zone safety controlled environment at Plymouth port).

In the ECS some facilities should be provided for passing yacht traffic: fuelling, watering, provisioning, light repairs etc. A buoy grid has been suggested at the opposite end of Little Bay. Any

55 The growth rate seems very high: perhaps some research is needed into this to establish a comparison with this forecast and actual GDP.

development of yachting marinas should be private sector led and care taken to separate such smaller pleasure vessels from the main Little Bay port passenger ferry and RoRo vessel traffics.

Some study of Isles Bay or Bunkum Bay could be made to determine if any dedicated facilities should be located there to assist developing yacht traffic together with a satellite customs post being established.

While the cruise industry is generally thought to be economically beneficial for embarkation ports and ports of call in the Caribbean, it is becoming detrimental, as cruise lines often try to play destinations against each other to spur the development of bigger and better port infrastructure and amenities for its passengers-often using local public funding at no cost to the cruise lines. It is noted that the Cayman Islands - with a land mass five times of Montserrat - has a thriving cruise ship market serviced entirely by tendering from ship to shore. It is the fourth most popular cruise ship destination in the Caribbean. However the updated *Outline Business Case* for the Cayman Islands does not support proceeding with the development of a cruise port in George Town. Since Montserrat could only service a fraction of the Cayman Islands cruise liner traffic and forecast traffic in a medium growth scenario for Montserrat is small a dedicated cruise terminal at Little Bay is not likely to be warranted soon and might have undesired environmental consequences⁵⁶.

Notwithstanding, Little Bay will provide a sheltered destination for cruise liners provided that the first phase of the breakwater is constructed. Tendering arrangements for visiting cruise liners can be provided by the private sector, although C&I arrangements would possibly need to be expanded to cater to cruise ships.

B: Air Transport Infrastructure

This section describes air passenger infrastructure requirements on Montserrat for the ECS.

⁵⁶ Experts such as Pinnock and Saltibus have expressed the view that the absence of a regional policy to govern the collection, transportation and disposal of ship-generated wastes in the Caribbean may lead to a situation where the costs of cruise tourism far exceed its benefits (large negative externalities).

Air transport operations - lifeline route and other new routes

The basis for the development of aviation services in the ECS57 is to provide connections with presently un-served regional locations that would help bolster the development of tourism in Montserrat. Since possible short-haul locations (Guadeloupe, St. Kitts, Nevis, and Barbuda) are each located within c. 60 nm of the airport; well within the range of the current types of aircraft servicing Montserrat, there appears to be no need, in short or medium-terms, to provide a different dimension of runway than already constructed at John A Osborne airport. Runway utilisation would increase with the introduction of such services, but not to high levels. The next steps in the market response to a build-up of new regional traffic is likely to be an increase in daily frequency of existing aircraft types (BH Islander) and possibly later, according to demand, the introduction of the larger aircraft type (Twin Otters)neither of which possibilities would necessitate runway extension.

Besides these short-haul locations, there are other islands that could be linked on scheduled medium haul services to Montserrat. St. Maarten, St. Barths, Anguilla and Dominica are each located within c. 110 nm of the airport, well within the range of the current range of aircraft servicing Montserrat. The normal range of a Twin Otter in normal cruise without auxiliary tanks is 560 nm, reduced marginally for fuel reserve requirements for VFR conditions58. The normal range of a BH Islander in normal cruise without auxiliary tanks is around 500-530 nm, reduced marginally for fuel reserve requirements for VFR conditions59.

An examination of the Medium Forecast adopted by the tourism masterplan for Montserrat indicates a GDP growth rate of 4.5 % p.a. which when translated into a passenger and aircraft projection over the next 10 years indicates that runway utilization would continue to be between 10 and 15 % to 2025. If the larger twin otter aircraft are operated, runway utilization could decrease in line with the increased seat capacity/larger aircraft servicing the route.

A review of the ECS should be undertaken in 2026 in particular looking at runway utilisation and regional connections.

In the case of increased airport utilisation, some hangar facilities60 may become necessary at the airport, and if so could be provided on a shared-cost basis with the private sector. Private sector co-investment in hangar and other facilities is unlikely in the absence of some kind of PSO agreement that guarantees a share of the market for a private sector operator. The scope for private/public investment in a joint use (GoM Helicopter/small aircraft) hangar could be examined, as traffic builds. The minimum shelter required for aircraft parked overnight should determine hangar size. If a

57 The lifeline air services to between Montserrat and Antigua should continue to be provided.

58 http://www.aoc.noaa.gov/aircraft_otter.htm

59 Although BN Islanders are usually operated between Antigua and Montserrat as a single-pilot operation, it was pointed out to the Review that accidents on short trip operations due to pilot health issues are extremely rare. For this reason, no further comment on single pilot operations on the lifeline route has been made.

60 During discussions with operators the need for hangars related to two concerns: firstly for light servicing of aircraft (regular scheduled checking of aircraft to continue in Anguilla and elsewhere) and secondly for the protection of aircraft from either volcanic ash and/or during tropical storms. Overnight garaging could also be of interest to the private sector.

decision is made to invest in future, a location should be sought that is compliant with the ICAO obstacle avoidance guidelines.

As traffic builds, it is likely that the full range of additional safety measures identified in the Mott MacDonald Aeronautical Study be implemented at John A Osborne airport. The timing and scale of such investments should be commensurate with the build-up of traffic, with prioritisation on certain safety components in the early phase.

5.3 Operational aspects of the ECS

Some background information and requirements help determine the direction and scope of the operational aspects of the ECS61. A description of the operational requirements for the lifeline maritime and air transport routes for the ECS is provided in turn below.

A: Maritime Transport Operations

This section firstly describes ferry passenger operational requirements at each end of the lifeline route for the ECS. It is then followed by a description of the marine cargo operational requirements for RoRo and other traffics.

Ferry operations – lifeline route and other new routes

It is expected that there would be a single passenger ferry operator on the lifeline route, plus other scheduled ferries operating on other routes. The extent to which the life-line ferry operation would require subsidisation in the ECS is likely to be determined by growth in the tourism-led sector of the ferry market (possibly enhanced by dove-tailing Antigua Heritage Quay cruise ship arrival/departure times with the lifeline ferry schedules to encourage cruise ship ‘day trippers’, providing increased marketing in Antigua for short (non-cruise liner-based) visits to Montserrat, etc.). This market development cannot be foretold at present; however, operations in the short to medium term should seek to maximise tourist ferry passenger volumes *and revenues* on the Antigua/Montserrat service. It is important to share risk and to align incentives between the public and private sector in contracting.

In the short-term a number of research gaps exist within the *Last Mile* ferry market in the Caribbean and a further small study on such ferry operations has been proposed. Within the medium-term part of the ECS it is expected that further analysis to decide whether to provide Montserrat with a purpose built ferry (either fully funded or as co-investment with private sector), or if the market could operate profitably through non-subsidised ferry operations on the lifeline route will have been undertaken.

61 There is some link to institutional aspects.

Marine cargo operations - lifeline routes

Core traffic at Little Bay continues to comprise ferry passenger services and RoRo cargo services possibly with either higher frequencies (weekly RoRo vessel calls, rather than fortnightly calls) or through larger RoRo vessel operations with the same service frequencies. (It is more likely that liner call frequency would be increased, rather than vessel size increased for future RoRo traffic).

In terms of cargo handling, as TEU throughput (conventional containers and reefers) increases, there should be a drive to update container handling equipment, although this may be a case of modernising existing equipment rather than purchasing new technologies, due to the anticipated relatively modest forecast containerised cargo throughput volumes.

In general port operational requirements at Little Bay and Plymouth will be dictated by the traffic growth, which drives the scale of the investments to be made in the ECS. The availability of data for tourism and population, as provided within the GoM tourism masterplan for Montserrat is a useful source of information to base growth and development prediction for access requirements.

Plymouth port “relief” cargo and passenger handling

The extent to which Plymouth port may be operational in the ECS will largely depend upon the safety conditions associated with the Volcano (e.g. the entry/exit conditions for Zone V) and authorisations from appropriate safety authorities (MVO).

The extent to which long-shore drift and siltation are reducing the capacity of the existing jetty should be closely monitored and sufficient maintenance dredging carried out annually to maintain a certain depth alongside the jetty. Close monitoring of sand and aggregate handling at the wharf by MPA should be undertaken, to minimise spillage and to penalise contractors to pay for clean-up operations if spillage occurs.

Other marine traffic

For liquid bulk traffics, no change to existing arrangements is proposed other than consideration of provision of an avgas supply to the Carrs’ bay facility for airport operations.

B: Air Transport Operations

This section describes air passenger operational requirements on Montserrat for the ECS.

Air transport operations – lifeline route and other new routes

For lifeline air transport operations, options to enable passenger baggage to be checked straight through from long-distance origin hub (London) to final destination (Montserrat airport) and vice versa should be provided⁶².

A further issue to be considered within the wider tourism strategy for Montserrat is whether a reduction (or elimination) of the tourist (embarkation) tax from JA Osborne airport would encourage visitors and therefore offset foregone tax revenue.

No subsidy would be expected for any air transport connection in the ECS outside the lifeline route. It is hoped that in the ECS there would be several new market entrants in the air and sea transport markets⁶³ (operating on non-lifeline routes) that might serve to stimulate greater efficiency on the main Antigua - Montserrat ferry route as well as on the Antigua - Montserrat air route. It was noted during interviews with ferry market agencies in Antigua that rather substantial potential growth possibilities exist on the ferry route, particularly through improved tourism service (timetable) coordination (for day-tripping cruise liner passengers from Antigua) as well as through more intensive marketing efforts to attract longer-stay Antiguan holidaymakers on day-trips to Montserrat. The proposed tourism development expert would be responsible for market identification and surveys in new markets, as well as keeping in touch with issues raised by tour operators in Antigua.

The aim of a more developed tourism sector would be for two *or more* scheduled air transport operators servicing the JA Osborne airport, providing a range of regional services.

5.4 Institutional aspects of the ECS

Some background information and requirements help determine the direction and scope of the institutional aspects of the ECS. The three main elements of the institutional component supporting the ECS consist of improvements in management and coordination of the Access/Coordination function, tourism development and in connectivity strategy formulation and planning. The necessary improvements are included in the following three sections.

Management and day-to-day coordination aspects

The Access Coordinator role would benefit from revision as follows: In the ECS, the Access Coordinator role would be an operational role only; the Access/Connectivity Coordinator would continue to provide operational advice and support to connectivity (perhaps with a main focus on ferry passenger services, plus support of visiting cruise vessels) with arguably less of a role for the

62 Also the timing of flights to and from Montserrat should coincide with long haul flights to and from major destinations.

63 Although this may be an over-optimistic viewpoint.

coordination of air transport services, which are expected to have matured into a multi-operator unsubsidised environment within the short- to medium terms.

Tourism development role

In the ECS there would be much more of a role for tourism development (for instance new services – charter or scheduled- to adjoining islands). These would include Guadeloupe, St. Kitts, Nevis, Barbuda, etc. This capacity needs to be built in the short-term to start developing the tourism product and making sure marketing activities link tourism and access.

Where this role would be undertaken is under consideration however this is not considered to be a role that an Access (connectivity) Coordinator can perform well; it would require expertise in tourism research and development.

This is consistent with the decisions to move the Access Coordinator role to the Premier’s Office, to bring the tourism plan development under the Premier Office, to bring in private sector expertise to boost the tourism sector, etc.

There appears to be a relatively captive market for Antiguan day trip market to Montserrat. This consists of two complementary components, day-trippers from visiting cruise vessels moored at Heritage Quay and day-trippers (land-based holidaymakers on Antigua). Cruise vessel tourist arrivals in Antigua are substantial as are the number of tourists arriving on Antigua by air from Europe and the States byfor holidays. If only a portion of these prospective markets could be serviced, ferry occupancies could grow markedly. In the ECS therefore, the role of the Montserrat based tourism manager is a very important one.

Access strategy and planning aspects

It is proposed that all policy and planning for connectivity infrastructure be handled independently from the Access Coordinator role. In the short-term, this challenging task would likely require external expert or DFID support tapping into their internal technical expertise. In the longer-term, more sustainable arrangements would need to be considered.

section 6

Way forward and recommendations

6.1 Introduction

The Review has included a comprehensive and evidence-based review of a strategy for sea and air access for Montserrat, incorporating key GoM policy documents such as the tourism masterplan, the PDP and the Policy Agenda. It has considered the characteristics of access/connectivity strategies in a range of comparable OT's, drawing upon experiences, state of development and lessons learned. The strategy incorporates *good practise* elements relating in particular to safety, sustainability and operator efficiency⁶⁴ in Small Island Developing States (SIDS) and is aligned with the World Bank's recent analyses on (transport) connectivity in the Caribbean and other important regional studies. It includes the review of air and sea connectivity in the Caribbean environment as well as additional details from small islands with rough sea crossings in Europe (Annex 8).

The strategy recommends actions to upgrade the current access infrastructure and improve GoM capacity of managing and coordinating access effectively. Consequently a progressive connectivity development strategy is proposed consisting of two main phased options:

The Basic Connectivity Strategy (BCS) providing the two-way transport connectivity needs of Montserratians and Montserratian businesses encompassing and a series of actions (investment, operational and institutional related, spread over a short-term Immediate Action Plan period), plus a limited number of interventions extending into the medium-term; and

An Enhanced Connectivity Strategy that should be developed in line with the actual pace of development, to avoid over or mis-investment and to assure sensible use of resources.

Underpinning both options is the need to maximise the effectiveness of budget (for capital-investment- and operational support) and to capitalise on opportunities to share risks and costs with the private sector. A *pause and reflect* process will ensure that the Connectivity strategy is adaptable to market conditions, where necessary.

Implementation of the Basic Connectivity Strategy is the first step in the sustainable way forward. The '*big picture*' must not be derailed or lost in the daily '*to and fro*' of the many challenging access / connectivity issues. Tactical decisions and actions are absolutely necessary and critical to overcome immediate and short-term problems but may not address deep-rooted causal factors and/or forces or the need to take bold decisions on priority investments to ensure safety⁶⁵.

The previous Access Strategy opined that short-term measures have been applied over the years, but have not been sustainable. However necessary decisions have been made as and when the safety situation has been clarified (much of Montserrat remains under controlled access. The medium-term prognosis about the state of the Soufriere Volcano is not yet fully known)⁶⁶. There is some evidence that needed public sector investments are being held up by other factors. A decision

64 See Figures 3, 4 and 5.

65 That is the prime reason for splitting the present Access/ Connectivity role into two or three separate components, as indicated in section 6.3.3

66 MVO, June 2016

to invest in the development of Little Bay port⁶⁷ appears to have been made recently⁶⁸. A phased port development approach is suggested at Little Bay, starting with an ‘appropriately dimensioned’ breakwater - constructed and planned using VfM techniques⁶⁹ - to ensure the safety of Montserrat’s lifeline ferry and cargo services, which cannot return to the Plymouth facility.

Strategic policies and plans usually have a clearly defined single objective and a fairly defined roadmap to get there. The following sections articulate basic connectivity objectives and propose time bound recommendations and an outline assessment of budget needs, where possible, together with identification of lead institutions / some next steps.

6.2 Some basic connectivity goals

In the short-term, the goal is to ensure the supply of adequate and consistent capacity by air and sea on the lifeline route to Antigua, which is safe, efficient, reliable and affordable.

In the long-term the goal is to ensure the supply of consistent self-sustaining capacity by air and sea, which is optimal, safe, efficient, reliable and affordable.

6.3 Proposed strategy agenda

The proposed agenda commences with full implementation of a Basis Connectivity Strategy. The overarching strategy takes a three-pronged integrated approach:

Public and private sector investment in priority connectivity infrastructure (*primus inter pares*);

Operational improvements in lifeline air and ferry services; and

Supporting institutional development and capacity building.

The draft implementation plan is for the 10-year period, from 2017-2026. The implementation period is in five-year cycles. By the end of the first period, the strategy should be reviewed to advise the development of the next five-year implementation plan. The plan aims to be realistic and should be supported financially. The principal driver of the proposed short-term investment programme in the BCS is safety. None of the proposed *capital* investments in the BCS (Table 1) would be regarded as opportunities for PSP (e.g. providing opportunities to share risks and costs with the private sector), since breakwaters and SAR vessels conventionally fall under the category of *Public Goods*. The figures presented below illustrate some of the key recommendations emanating from the revised Access/Connectivity Strategy.

67 Rather than at Carr’s Bay

68 Manager of Montserrat Port Authority, May 2016

69 A political economy analysis could be beneficial.

6.3.1 Public and private sector investment in priority connectivity infrastructure

The timeline for the priority investments is within the coming five years, although in some cases planning would need to start immediately due to long lead times for construction (an example being the breakwater at Little Bay). The principal recommendations for connectivity infrastructure underpinning the Basic Connectivity Strategy (BCS) are provided in Table 3 for the lifeline ferry and air passenger route and marine cargo.

Table 3 Principal recommendations for connectivity strategy infrastructure

Category	Investment Component of Basic Connectivity Strategy
Ferry Transport	
Issue 3.1	Terminal facilities should be provided at both ends of the lifeline ferry route that ensure 365 day passenger safety. Such facilities would include breakwater protection to permit safe operation of the ferry berth at Little Bay. The breakwater should be provided in a phased development programme that considers preliminary design and construction planning in much more detail. Of vital consideration are the proposed breakwater fabrication method and the breakwater design to achieve VfM.
Recommendation	Immediate focused Little Bay Port breakwater desk review study, leading to large-scale investment in an appropriate (Scalable) Phase 1 breakwater
Informed by and compliant with Good practise	A number of relevant Good Practise compliance measures are suggested. The designs shall consider climate change impacts and seismic hazards (ground velocity, etc.) in the design and implementation of port development planning at Little Bay, UNCTAD, 2014, UK Met Office April 2016. The designs and construction methods shall follow industry good practise guidelines on VfM. Procurement should follow international standards.
Budget implication	Little Bay Port scoping study being prepared for CDB/ DFID leading to Updated Capex Estimates for Breakwater Investment.
Lead Institution	Premiers Office (with DFID and CDB support)
Next Steps	Undertake technical review study for an appropriately dimensioned first phase breakwater
Issue 3.2	Some additional support could be provided at Little Bay for port operations (police cutter, fire and safety equipment, etc.) SAR capability in case of a lifeline ferry grounding or capsizing should be studied further
Recommendation	Conduct an immediate SAR support review considering different options (leading to investment in SAR equipment, or an agreement with Antigua on joint funding of an Antiguan based SAR vessel, etc.)
Informed by and compliant with Good practise	A number of relevant Good Practise compliance measures are suggested. In conjunction with the DMCA, ensure ferry and air transport operators on lifeline routes prepare a ferry safety plan in case of disaster at sea (fire, capsizing, etc.) and an aircraft safety plan in case of ditching at sea or runway undershoot/overshoot. Coordinate with regional SAR organisations, regional and international response mechanisms, to bolster air and maritime safety for mass casualty events (maritime and aviation incidents)
Budget implication	Presently unknown for supply of a locally operated SAR vessel. Emergency Safety Plans should form a part of service operator contracts. Budget will depend on the recommendations from the SAR support review (but unlikely to be large)
Lead Institution	DMCA (with DFID support)
Next Steps	Undertake review and report to all interested parties, some preparatory research work may already be available
Air Transport	
Issue 3.3	Enhancement of facilities at John A Osborne airport in respect of improving safety for (a) bad weather capabilities and (b) limited night-time operational capabilities (exceptions basis) is being considered. A number of suggestions have been made in terms of safety and provision of minor facilities. It is understood that some of these are being implemented
Recommendation	Track any missing items then undertake (small-scale) investments in safety, as necessary
Informed by and compliant with Good practise	In compliance with ASSI and ICAO directives and guidance
Budget implication	Presently unknown but likely to be small
Lead Institution	Airport Manager (with DFID support)
Next Steps	Present safety implementation progress report to DFID /GoM
Marine cargo	
Issue 3.4	There will be time to consider the scale of new port development at Little Bay once the first phase of the breakwater has been constructed, although some preparatory steps may be advisable in the short-term. Landside operations may need support as present MPA equipment is old and other more modern types of small handling equipment may be necessary
Recommendation	Major investments decisions are on hold, pending progress on breakwater implementation, however smaller scale investment planning can be undertaken in the form of a low-cost IAP
Informed by and compliant with Good practise	The Port designs should be optimised based on a realistic assessment of the marine container and ferry cargo traffic, and the proper attribution of cargoes
Budget implication	No immediate investment, however cost estimates should be prepared for a small-scale IAP, in tandem with the start of breakwater construction. Pds 25,000 for small study. (after 3.1 has been completed)
Lead Institution	MPA with DFID technical support (as appropriate)
Next Steps	Undertake planning for port development, perhaps starting with existing cargo facility and handling equipment review
Other Marine traffic (Plymouth Port)	
Issue 3.5	MPA does not have facilities on site at Plymouth pier for easy monitoring of port use, vessels are damaged at the pier through lack of fender equipment
Recommendation	Undertake cost assessment of need and make immediate (small-scale) investment in support facilities; possibly for Portakabin for MPA monitoring/control staff
Informed by and compliant with Good practise	Actions should be compliant with the requirements of the (Plymouth) Port safety plan and port environmental standards
Budget implication	Presently unknown but likely to be small
Lead Institution	MPA
Next Steps	A cost assessment needs to be prepared by MPA and work included in the next years budget

The proposed interventions comprise a mix of large and small-scale interventions in the different modes. The first two recommendations for ferry transport are regarded as having the highest

priority, budget implications and the longest lead times. In particular, for safety reasons, it is recommended that the breakwater study and construction plan proceed without further delay. Some supporting studies are required during which capital investment cost estimates would be prepared for a breakwater at Little Bay Port and for a SAR vessel.

The Government of Montserrat is seeking funding for the Little Bay breakwater through the U.K. Caribbean infrastructure Partnership Fund. This is a program funded by DFID and managed by the Central Development Bank (CDB). An initial allocation for the project was advised to Government of Montserrat in July 2016 totaling 14.4 million pounds sterling.

In the case of Issue 3.1, the public capital investment costs associated with the breakwater construction at Little Bay Port are likely to be substantial and the results of the CDB Little BayPort scoping study are expected soon)⁷⁰.

6.3.2 Operational improvements in lifeline air and ferry services

The Review concurs in general with existing Access Strategy modal *competition and subsidy policies*⁷¹, details of which are presented below.

Competition issues in the lifeline air and sea connectivity markets

Competition is not expected to be robust but is desirable between the lifeline airline and ferry services. The airline market will correct itself when subsidies are eventually withdrawn and a sustainable strategy is firmly implemented. It is envisaged that one or two airline operators and a single ferry service operator will provide services at the quality and price levels generally satisfactory to stakeholders and the market.

The key competitive factors between the two services are the fares, travel time, journey comfort, and flexibility in departing times out of Antigua, reliability and cargo carrying capacity. While the airlines have the advantage in travel time, the ferry service has stronger attraction for its fares, flexible-departing times from Antigua and cargo carrying capacity⁷². Competition gives the market choice.

70 External finance has been made available to finance the cost of an expert to develop a scope of a feasible port development project. The expert was procured by CDB and arrived on island in early December 2016. A report is due soon. The report will form the basis for the final application to CDB to secure the funding for a breakwater. No confirmed date for the breakwater can be given but once the funding is secured planning for the development will begin and it is hoped that mobilization will be within twelve to eighteen months with completion within one year.

71 *Montserrat Access Strategy, 2011.*

72 A further impediment to ferry transport usage are lower passenger comfort levels due the rough sea crossing.

Generally, the core market for ferry passenger customers and air passenger customers are different and the one is not likely to affect the other substantially once choice is available and fares are affordable⁷³. In particular, poorer Montserratians would be captive to the lifeline ferry service, as would a presumed majority of Antiguan day-trippers. As noted by research in the Caribbean, a large percentage of the market will be elastic to a significant change in fares and will be attracted to the mode of travel with a relatively lower fare⁷⁴.

Short-term policy: measures to improve commercial viability on life-line routes

Some general principles appear to be emerging based on DFID and GoM's experience over the past decade. For instance, subsidies, if granted, should only be provided on the lifeline ferry and air transport routes. No subsidies would be awarded for marine or aviation freight, no subsidies would be awarded for any new non-lifeline air transport connections.

Developing subsidy policy for the life-line ferry route

In the BCS, it is noted that subsidies would need to be provided particularly on the ferry route. As the lifeline ferry service links Antigua and Montserrat, some ferry subsidy sharing arrangement with the authorities in Antigua should be negotiated, if possible, in order to improve commercial viability of the service. The service procurement should aim to maximise the effectiveness of aid money. Since the demand for the ferry service is seasonal, with highest traffic associated with the winter season, during which a larger vessel is required on the route, ideally potential ferry service bidders should offer a larger winter season vessel and a smaller summer season vessel. Such an approach could reduce the average ferry passenger subsidy requirement.

Developing the subsidy policy for the life-line air transport route

It is hoped that through competitive tendering, potential operators would bid for a minimum subsidy requirement on the lifeline air services⁷⁵. The likely impact of this policy is that the market, due to the large cost differential between the two expected aircraft types, would likely offer the smaller aircraft type⁷⁶.

73 Rigas (2009) and Tsekeris (2009) further suggested that air transport is advantageous for time-sensitive and longer-haul passengers, while sea travel is the preference of cost conscious and leisure passengers.

74 *Study to Determine the Feasibility of a Profitable Shipping Network Satisfying Demand for Shipping Services in OECS States – Dominica, Grenada, St Lucia and St Vincent & The Grenadines*, GOPA 2009

75 The current approach towards tendering for air transport and ferry services should be continued. Service funders are looking for innovative market and technology approaches on both lifeline routes, and VfM is a strong factor at the contracting stage, through inclusion of performance monitoring mechanisms, etc.

76 Later procurements could result in a low-cost *air shuttle* type of service on this route, without subsidy requirement.

Longer-term policy: an approach towards award of travel subsidies

Both in the BCS and the ECS provision should be made for the progressive reduction in subsidies on the lifeline routes. This must be linked to the implementation of a strong and purposeful tourism-marketing plan, which delivers increasing volumes of passengers to Montserrat.

Subsidy Policy for lifeline ferry route

In the ECS, as markets and traffics build on the lifeline ferry service, a position may be reached where the travel subsidy would be awarded to Montserratian residents only. In general, the preferred approach would be to generally phase out travel subsidies, in line with market growth.

Subsidy Policy of air transport route

In the ECS, the desired policy position would be no subsidy award for the life-line air transport services, entrants of new operators on other regional short-haul route connections without subsidisation: a free market competition situation in air transport. The only exception might be if a monopoly situation arose on the lifeline route and GoM wished to open a *second lifeline peak period* route to St Kitts (or Guadeloupe), consistent with the tourism development strategy. The case for subsidy would be examined at that time. The existing Montserrat Access Strategy recommends that *'a condition-based subsidy be provided only for a limited number of schedule flights to operate in St. Kitts' and Guadeloupe's gateways during specific periods in the year. This policy would provide support for the development of connectivity through these alternative gateways. The subsidy support should be based on a strong tourism-led marketing programme'*.

The principal recommendations for Connectivity Operations underpinning the Basic Connectivity Strategy (BCS) are provided in Table 4. The proposed institutional interventions comprise a mix of recommendations in ferry and air transport (as indicated in table 4a) and for other marine traffic (as indicated in table 4b).

Table 4a Principal recommendations for connectivity strategy operations: ferry and air transport

Category	Operational Component of Basic Connectivity Strategy
Ferry Transport	
Issue 4.1	In the Immediate Action Plan, a new tendering procedure is underway for lifeline ferry and air transport services in which some innovative aspects of service provision are being tested and introduced. These requirements are based on a need to include MIS and performance management in contracts and to undertake risk sharing with the private sector, where possible. This is an encouraging development. There is an opportunity to monitor and fine tune the service contracts in the next round of contract negotiations (expected late in 2018).
Recommendation	Monitor and fine-tune service contracts in IAP period, ensuring maximisation of effectiveness of UK aid money
Informed by and compliant with Good practise	Actions are consistent with the established policy positions on sea- air service competition and transport subsidy.
Budget implication	To help ensure that funding is available for annual subsidies (preferably on a declining basis over time)
Lead Institution	DFID, working with appropriate entities on Montserrat. The Access Coordinator is expected to contribute extensively
Next Steps	DFID and Access Coordinator to prepare working paper on this topic, after consultation with appropriate parties, including future procurement directions
Issue 4.2	Passenger lives could be at risk with operation of single hulled ferries on the Montserrat- Antigua sea crossing, Lifeline ferry service characteristics remain to be fine-tuned
Recommendation	Conduct Study of optimum ferry vessel type and size for the lifeline sea crossing considering sea-state conditions throughout the year
Informed by and compliant with Good practise	The actions are to ensure compliance with service safety and operational requirements. The study team should comprise a marine transport specialist and a transport planning/economist specialist. Consideration of life-cycle costs.
Budget implication	Small-scale technical study : 20 WD for Team. Rrequires two expert specialisations: Senior Transport Economist: 10 WD and Senior Maritime Specialist: 10 WD. One member of the Team should undertake a short (week) visit to Montserrat; the reimbursables budget should be dimensioned accordingly.
Lead Institution	DFID, working with appropriate entities on Montserrat and Antigua
Next Steps	DFID to prepare working paper on this topic, after consultation with appropriate parties
Issue 4.3	Support to operational aspects of the ferry operation at Little Bay should be considered, in order to reduce average Customs and Excise and baggage handling processing times
Recommendation	Once new ferry service is operational conduct time and motion studies for the average month and for the peak month to determine scope for improvements. Conduct analysis of customer complaints.
Informed by and compliant with Good practise	The actions are compliant with industry standard customer handling target levels and resolution of customer complaint procedures.
Budget implication	None: planning and coordination function.
Lead Institution	Access Coordinator in conjunction with Customs and Immigration
Next Steps	Access Coordinator to prepare working paper on this topic, after consultation with appropriate parties, including ferry operation serving Montserrat
Issue 4.4	At the dedicated ferry facility at Heritage Quay in Antigua, measures are currently being introduced to separate and provide different facilities for the C&I processing of embarking and disembarking ferry passengers.
Recommendation	Monitor developments and track need for further facility improvement at Antigua
Informed by and compliant with Good practise	The actions are compliant with standard service safety and operational requirements
Budget implication	None: planning and coordination function
Lead Institution	Access Coordinator
Next Steps	Access Coordinator to prepare working paper on this topic, after consultation with appropriate parties, including airlines serving Montserrat

The proposed operational measures comprise the main recommendations each for ferry and air transport.

One of the four main recommendations for ferry transport is not new (review of ferry facilities and operations on Antigua) however the other three concern very important service aspects. Foremost of these is the need to institute more modern and efficient procurement and contracting arrangements, and then to monitor usage and customers much more closely than has been undertaken in the past. Although work has been done in the past on defining ferry characteristics no definitive conclusions were reached, hence a short study has been recommended, which would be led by the Access Coordinator.

A small-scale study is recommended to determine the optimum lifeline ferry service vessel type and operational service characteristics, considering the annual demand and the sea crossing conditions.

In the case of Issue 4.1, the GoM procurement process led to the procurement of the Jaden Sun for the operational period December 2016 to October 2017. The vessel has sufficient capacity to handle peak passenger loads (with a passenger capacity of 218 persons) but is considered to be providing excess capacity during almost half of the year when existing passenger volumes are lower. A question has been raised over whether this arrangement is long-term cost effective proposition.

The operational costs associated with the provision of such a large vessel year-round are substantial. As the ferry service procurement renewal period would arise towards the end of 2017, there is therefore a justification for the launch of the proposed small-scale study of the optimal life-line vessel type and operational service characteristics, in mid 2017: (10 WD each, for a small team of two experts), as outlined in Issue 4.2.

The more detailed analysis of operations and costs, capacity/ utilization/ productivity: it should be based on round trips with port time, down-time from weather, breakdowns, as well as on conditions at berth on Montserrat, related to the presence or absence of shelter. (The desired/ assumed mix of cargo and passenger transport would be further reviewed). The proposed study would serve to identify cost savings and provide recommendations on how to maximise effectiveness of UK aid money and capitalise on opportunities to share risks and costs with the private sector.

The three main recommendations for air transport are not new and would provide additional capacity at the airport as well as easing the arrangements for air travel to and from Montserrat. The budget implications for operational measures for ferry and air transport, with the exception of subsidy support on the lifeline ferry and air transport route are in most cases negligible.

Table 4b Principal recommendations for connectivity strategy operations: other marine traffic

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The proposed operational measures for other marine traffic comprise four main recommendations, which consider port planning/operations at Little Bay, servicing of yacht traffic, and occasional traffic arrangements for Plymouth port. The budget implications for operational measures for other marine traffic are in most cases negligible.

6.3.3 Supporting institutional development and capacity building

Montserrat has a population of just over 5,000 persons. The size of the population is a major constraint to the country's economic development; the small size restricts the public sector's ability to raise revenue and its ability to provide economic and social services at competitive prices because of the inability to benefit from the economies of scale. It also restricts the size of the pool from which to draw qualified technical experts for important government positions. Along with the constraints on the public sector, there is very little private sector capacity in Montserrat.

Shortcomings in existing institutional arrangements and future growth opportunities have been identified. GoM and DFID can work together within the new arrangements to improve access coordination, notwithstanding known capacity constraints. Current GoM policy directions within the 2016: 2019 Policy Agenda should underpin the MCS.

Goal 1: Prudent Economic Management

To change the development focus from post-volcano mode to developing and implementing plans focused on sustainable self-sufficiency that captures the spirit of Montserrat's past and preserves Montserrat's culture including enhancing relationships within the region and with key development partners.

Priority sectors for generating foreign direct investment identified including those that leverage Montserrat's unique assets and character and implement appropriate sector strategies.

Identification of obstacles to doing business and sequenced plans implemented for their removal and mitigation.

Priority infrastructure for generating economic growth identified and plans put in place to deliver.

Local resources unlocked to stimulate growth in domestic business.

The diaspora and the expatriate community engaged in national development.

The proposals made in the revised Montserrat Access/Connectivity Strategy (Basic Connectivity) are fully consistent with Goal 1 of the current Policy priorities⁷⁷ including notably removal of obstacles to doing business (year round port operation) as well as enhancing relationships in the region (consideration of new short-haul air and fast ferry connectivity linkages to St. Kitts and to Guadeloupe). The principal recommendations for Connectivity Institutional Development underpinning the Basic Connectivity Strategy (BCS) are provided in Table 5. The proposed institutional interventions comprise a mix of recommendations in three areas: Day-to-Day Coordination aspects, Tourism Development and Access/Connectivity planning (as indicated in

tables 5a, 5b and 5c). The budget implications for institutional development measures are in most cases negligible.

Table 5a Principal recommendations for connectivity strategy institutional elements:
Management and Coordination Aspects

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The proposed institutional Management and Coordination measures comprise several recommendations, which re-orient the current Access/ Connectivity Coordinator role in line with current needs. Further details are provided in Annex 5.

Table 5b Principal recommendations for connectivity strategy institutional elements: Tourism Development Aspects

Category	Institutional Component of Basic Connectivity Strategy
Tourism development role	
Background	Tourism has emerged as a key economic pillar contributing, in 2011, up to 12 % of all jobs and about 14 % of the region's GDP. This contribution to the Caribbean economy translates to about US\$ 50 billion for 2011 and 2012. Almost half of these contributions can be traced to capital investment in the travel and tourism industry, one third are linked to service industries dealing with tourists (including transport services and food and leisure industries); and the remaining 20 % are due to the multiplying effect of both capital investments and derived service. The strategy, (particularly in the ECS) postulates a much more important role for tourism development (for instance new services –charter or scheduled- to adjoining islands). These would include Guadeloupe, St. Kitts, Nevis, Barbuda, etc.
Issue 5.4	This capacity needs to be built in the short-term to start developing the tourism product and making sure marketing activities link tourism and access. Importantly, the Caribbean market is a top performing market for Montserrat. This market has unique characteristics and has huge potential for growth and development. Caribbean travellers are generally 'events' oriented. In the nearby region alone, i.e. Antigua-Barbuda, St. Kitts-Nevis and Guadeloupe, a total visitor and resident market size of approximately 2.6 million people exist. A small percentage of that total, i.e. 2 % annually produces 56,000 visitors. This volume may be on the top end of Montserrat's on-island carrying capacity. Connectivity and Tourism are inseparable and must perform optimally and in tandem
Recommendation	There is a need for improvement in the marketing effort to increase the number of tourists/visitors, need for collaboration between the Airport and the MTB to attract flights and passengers from neighbouring islands, a need to explore possibilities for the development of new gateways in St. Kitts and Guadeloupe as well as for improvements in the marketing effort to increase the number of tourists/visitors.
Informed by and compliant with Good practise	Actions are consistent with the GoM Tourism Masterplan and the updated Access Strategy
Budget implication	Presently unknown but likely to be small
Lead Institution	Where this role would be undertaken should be carefully considered; however, in the short-term the tourism plan development falls under the Premier's Office, to bring in private sector expertise to boost the tourism sector, etc. The longer-term institutional arrangements should ideally follow the recommendations made in the tourism Masterplan.
Next Steps	A series of tourism development measures have been proposed for new gateway development – St. Kitts, Guadeloupe such as: 1. Build market demand for each gateway: 2. Arrange with Customs, Immigration and airport authorities at the respective gateways, and the efficient and hospitable facilitation of in-transit passengers. 3. Communicate the gateway arrangements to the market through the various tourism communication distribution channels. Each should be evaluated properly using internationally accepted survey and analysis techniques
Issue 5.5	There appears to be a lack of data about the attitudes and desires of existing ferry and air passengers and also little information about the travel needs of potential tourist passengers.
Recommendation	The tourism development office should start to determine through surveys the WTP/ATP of each category of traveller. There could be some marked differences The services need to be tailored to the needs of the market.
Informed by and compliant with Good practise	Actions are consistent with the GoM Tourism Masterplan and the updated Access Strategy
Budget implication	Presently unknown but likely to be small
Lead Institution	Where this role would be undertaken should be carefully considered; however, in the short-term the tourism plan development falls under the Premier's Office, to bring in private sector expertise to boost the tourism sector, etc. The longer-term institutional arrangements should ideally follow the recommendations made in the tourism masterplan.
Next Steps	The Tourism Division should stress the importance of a tourism friendly' approach to border officials at the airport and seaport, perhaps through conducting a workshop on this topic. It should start to collect passenger information on a routine basis. A working Paper should be drafted showing how this will be carried out, including sample size, data analysis approach, etc.

The proposed institutional Tourism Development measures comprise two main recommendations, which consider marketing efforts for new nearby destinations and tourism data.

Table 5c Principal recommendations for connectivity strategy institutional elements: Access Strategy and Planning Aspects

Access strategy and planning aspects	
Issue 5.6	Project management capacity is low therefore a temporary PIU structure is deemed appropriate for larger-scale and technically challenging projects. An on-going study is investigating the most appropriate legal status for a PIU: its governance and accountability arrangements, financial status and financial management. This study may prove guidance for implementation of large public sector investment schemes, within the Montserrat Connectivity Strategy such as breakwaters, etc.
Recommendation	All policy and planning for connectivity infrastructure be handled independently from the Access Coordinator role. In the short-term this task would likely require external expert or DFID support tapping into their internal technical expertise.
Informed by and compliant with Good practise	Actions are consistent with good planning practises, involving Cost Benefit appraisal, VFM analysis, etc. Technical teams should have the correct skills mix.
Budget implication	None: part of the PIU establishment
Lead Institution	PIU, in conjunction with DFID and other appropriate agencies
Next Steps	A PIU will need to be established. Conventionally, a Ministry of Transport (MOT) undertakes modal and multi-modal transport planning. In the longer-term, more sustainable arrangements would need to be considered, such as migration of a growing planning capability from a PIU to the MOT (MCW). The key components of the Montserrat Connectivity Strategy need to be communicated well; to properly articulate why the policy is an incremental one leading to certain investments and services.
Issue 5.7	Procurement and contract management capacity is low. Coordination between GoM and operators and contract management has been poor. There have been no regular coordination meetings between the relevant parties. With the current air arrangement in place there are now weekly meetings between airlines and GoM and that helps a lot in addressing problems and bottlenecks. However this has been driven by Head of Procurement and not by the access coordinator.
Recommendation	A temporary PIU structure is deemed appropriate for the on-going ferry and air transport connectivity service procurement and contracting processes. A PIU would most likely have significant project management and procurement skills embedded within it. The PIU could, in the short-term, manage the Connectivity Strategy ferry and air transport service procurements, including performance indicators for each, with rewards for over-achievement and penalties for under-achievement. Technical members of the PIU would be able to provide On-The-Job Training (OJT) to their Montserratian counterparts.
Informed by and compliant with Good practise	Actions are consistent with established procurement guidelines and good contract management practises
Budget implication	None: part of the PIU establishment
Lead Institution	PIU, in conjunction with DFID and other appropriate agencies
Next Steps	A PIU will need to be established. Subsequently technical members of the PIU would be able to provide On-The-Job Training (OJT) to their Montserratian counterparts.

The proposed institutional Access Strategy and planning aspect measures comprise two main recommendations, which consider future implementation arrangements for infrastructure provision and service planning (contracting).

6.4 Gaps in evidence

The gaps in the evidence highlight the need for more focused research and evidence gathering for better understanding of risks and opportunities relating to the breakwater design and construction plan for Little Bay. Further details are provided in Annex 4. This recommends a short desk-based review by a very experienced and independent Port Planner/Engineer, to assess and consolidate all the (many and expensive) large port and hydrographical /environmental studies that have already been conducted at Little Bay and Carr’s Bay, with a view to making a set of strategic and practical recommendations for a cost effective and incremental breakwater construction approach. The location of the breakwater should be an optimised trade-off between achieving shelter and cost. Within shelter, the Port can build on the facilities that they already have and can be developed progressively to meet need. A phased approach can be more flexible. However, it also needs some medium/long term plan so that the short-term work on the Port contributes to the longer-term solution, rather than becoming obsolete.

Most ferry studies consulted during the Review concentrated upon the region as a whole, including a broad spectrum of different ferry service types ranging from fast ocean-going catamarans to smaller conventional single-hulled vessels operating on very short routes. While exploring opportunities for further development of the lifeline ferry system, further and deeper research needs to be directed firstly towards better understanding of the local sea crossing environment. The Team would comprise a Senior Transport Economist (10 WD) and a Senior Maritime Transport specialist (10WD), both familiar with maritime transport in the Caribbean⁷⁸. The crossing appears less exposed than the Antigua- Barbuda ferry route or the Trinidad- Tobago ferry route, but more exposed than the St. Kitts – Nevis ferry route. Optimal vessel design will therefore include more detailed examination of speed and safety requirements, the need for cargo facilities (if any) as well as seating capacity. It is not proven (yet) that port-to-port crossing time needs to be *less* than an hour. Such study would benefit from looking in more detail at what works and what does not within the short-distance Caribbean ferry market, with an aim to provide a safe, comfortable, popular and sustainable lifeline ferry service, with minimal subsidy requirement.

A few short but robust studies can assist in fine-tuning these aspects of the Connectivity Strategy. Such studies are expected to help in efficient project design and service procurement. These are some possible areas where DFID can play a role by arranging for complementary technical assistance (TA).

78 A short site visit (one week duration) would be required by one of the team members.

A thorough literature search was carried out within the permitted timeline. The purpose of this part of the review was not only to inform this study of the issues faced by the Caribbean air and ferry transport industry, but also to help to put a historical timeframe on the issues and assisting in identifying the remaining gaps that paved the way for the Review. Previous studies were loosely grouped into core studies that covered similar themes and geo-political area and global, neighbouring region studies that covered similar air and maritime transport themes and issues. Previous literature was frequently used as part of the positioning and scoping of recommendations and findings, and to make checks on reliability and validity of the data collected for this Review.

Policy documentation Montserrat

GoM (MCW) *Montserrat Access Strategy*, Noakes, 2011

GoM's *National Tourism Masterplan for Montserrat*, Tourism Planning Association, January 2016.

National-Policy Final-Consultation-PDP, 2011.

The Government of Montserrat Policy Agenda 2016/17 – 2018/19, September 2015

Final-Consultation-PDP_National-Policy.pdf http://ppu.gov.ms/wp-content/uploads/2011/10/Final-Consultation-PDP_National-Policy.pdf

Energy Snapshot Montserrat, Energy Transition Initiative,
<http://www.nrel.gov/docs/fy15osti/64126.pdf>

Energy Policy: The-Power-to-Change-MNEP-Cabinet-Approved.pdf, <http://www.gov.ms/wp-content/uploads/2016/02/The-Power-to-Change-MNEP-Cabinet-Approved.pdf>

<http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Air%20pollution/Feasibility%20Study%20on%20LNG.pdf>

DFID's Support to Capital Projects in Montserrat, July 2013: cai.independent.gov.uk/wp-content/uploads/16-July-2013-ICAI-Montserrat-report-FINAL.pdf

<http://www.visitmontserrat.com/>

Good practise (Caribbean transport)

Connectivity for Caribbean Countries An Initial Assessment Cecilia Briceño-Garmendia, Heinrich C. Bofinger, Diana Cubas and Maria Florencia Millán-Placci, World Bank 2014

http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2014/07/24/000470435_20140724102013/Rendered/PDF/896920WP0CGF0L0Box0385289B00PUBLIC0.pdf

Driving Tourism in the Eastern Caribbean: The Case for a Regional Ferry Julie Barbet-Gros, Brian Samuel, Rachel (Raha) Shahidsaless, and Trang Thu Tran

Caribbean Regional Action Plan on Freight Logistics, Maritime Transport and Trade Facilitation
Coordinated by Krista Lucenti IADB December 2014 Technical Note No. IDB-TN-712

UNCTAD (2013) Liner Shipping Connectivity Index. www.unctad.org

International studies and treaties

Climate Change: Assessing Climate change and its likely impact on selected UK Overseas Territories: DFR Met Office, April 2016.

Trade: Revised Treaty of Chaguaramas:
http://datd.cepal.org/Normativas/CARICOM/Ingles/Revised_Treaty_of_Chaguaramas.pdf

Partnerships for sustainable and resilient transport systems in SIDS, United Nations Conference on Trade and Development Palais des Nations CH-1211 Geneva 10, Switzerland, United Nations 2014
http://unctad.org/en/PublicationsLibrary/dtltlb2014d2_en.pdf

Small island developing States: Challenges in transport and trade logistics UNCTAD, 2014
http://unctad.org/meetings/en/SessionalDocuments/cimem7d8_en.pdf

SAREX <http://www.spc.int/edd/en/document-download/finish/69-aviation-information-paper/2007-aviation-information-paperissue-3>

Ferries

Driving Tourism in the Eastern Caribbean: The Case for a Regional Ferry
Driving Tourism in the Eastern Caribbean: The Case for a Regional Ferry

Towards a demand model for maritime passenger transportation in the Caribbean: A regional study of passenger ferry services Omar Bello, Willard Phillips, Delena Indar, Studies and Perspectives, UN ECLAC January 2016

An Analysis of Cruise Tourism in the Caribbean and its Impact on Regional Destination Ports ADRIAN HILAIRE Saint Lucia (WORLD MARITIME UNIVERSITY Malmö, Sweden)

Maritime SAREX: MIRG: The Maritime Incident Response Group <http://imrfmirg.org/>

http://www.nycedc.com/sites/default/files/filemanager/Resources/Studies/NYCEDC_Ferry_White_Paper.pdf

Pre-Feasibility study of a Solar Ferry Concept for the Caribbean, International Techno Consult - Jörg Albrecht, GIZ, Berlin, February 2015

Caribbean ferry websites

<https://www.bviwelcome.com/ferries.php>

<http://www.stkittstourism.kn/explore-st-kitts-getting-around-ferry.php>

Aviation

Aeronautical Study of JA Osborne Airport, Mott MacDonald, 2014.

http://www.aoc.noaa.gov/aircraft_otter.htm

<http://www.britten-norman.com/islander/>

Concept Paper Strategic Plan for Air Transport Services in CARICOM January 11, 2009, El Perial Management Services

Making Air Transport work better in the Caribbean, Caribbean Development Bank, May 2015, <http://caricom.org/media-center/multimedia/document-library/>

Maritime

A Concept Paper For The Preparation of Strategic Plan on Maritime Transport Services for the CARICOM Single Market and Economy, CARICOM August 2015 <http://caricom.org/media-center/multimedia/document-library/>

A Study to Determine the Feasibility of a Profitable Shipping Network Satisfying Demand for Shipping Services in OECS States – Dominica, Grenada, St Lucia and St Vincent & The Grenadines GOPA GmbH, Draft Final Report, OECS Shipping Study Beneficiary Framework Contract Lot 2 – Transport and Infrastructure: December 2009

Services Regulation in the Caribbean Transport Services, Kathy-Ann Brown, IADB, Integration and Trade Sector Technical Note No. IDB-TN-569 April 2013



Introduction

Montserrat is a British Overseas Territory, located in the Leeward Islands of the Caribbean Sea. The UK Government is obliged to meet Montserrat's 'reasonable assistance needs' on Montserrat under the terms of the UN Charter. DFID is helping Montserrat to gradually gain more economic self-sufficiency through enhanced private sector activity. DFID's other objectives are to support public services in cost-effective ways and to limit HMG's risk of contingent liability.

Montserrat was largely economically self-sufficient until 1989 when Hurricane Hugo destroyed key economic and social infrastructure in the developed south of the island. Montserrat was beginning to recover when the south of the Island suffered a series of violent volcanic eruptions starting in 1995, which resulted in the abandonment of the island's capital, Plymouth and the exclusion of the southern half of the island. The population is now around 5,000 (2014) but was 12,000, prior the volcanic eruptions. The public sector contributes around 70% of GDP. Local revenue makes up about 45% of the Island's budget, with the UK Government meeting the remainder through budgetary assistance.

As for any island, adequate access is critical for Montserrat: Tourism is Montserrat's most promising export and its tourism product can't be further developed without efficient access links. Montserrat's local private sector needs cost-effective access to the regional market to source inputs and build a larger customer base. Montserratians (in particular poor and vulnerable individuals) rely on affordable access to goods and services that might not be available on island, in particular specialised health care and education. This also includes emergency evacuation (a UK contingent liability).

DFID has subsidised access to Montserrat since the volcanic eruption led to the destruction of the island's airport and the abandonment of its seaport. At first, DFID funded both ferry and helicopter services to Antigua until the new airport opened in 2005. Expectations that the new air services would pick up the slack from discontinuing sea access were not realised and tourist arrivals declined.

In response to that DFID and GoM sought to reintroduce a ferry service, initially only running a few times per week. In 2010, after an unsuccessful attempt to get the private sector to operate the ferry on a commercial basis, DFID agreed to increase the ferry subsidy but it could only secure a slow, dilapidated service operating three days a week. Recognising the need for a more adequate service that could operate five days a week, attempts were once again made unsuccessfully to generate private sector interest. Instead DFID Ministers approved an increased access budget of £1.5m per year (sea and air) in April 2013 as part of the broader "Strategic Growth Plan" agenda. Increased funding secured the introduction of the Caribe Sun in November 2013, which has been operating between Montserrat and Antigua until 5. April 2016.

Since the reintroduction of the sea and air service GoM has been struggling with the coordination and management of access. Key issues are performance management, management information, coordination between service providers as well as within GoM and balancing of

sea and air access (currently two airlines operating Britten-Norman Islanders). In 2010 DFID funded the role of an access coordinator to address some of these concerns. Following the appointment an access strategy was drafted in June 2011, suggesting short and long-term measures to improve access to Montserrat. While the short-term recommendations have been acted on, little progress has been made on the long-term suggestions. Circumstances have changed substantially since 2011, in particular GoM's and DFID's policy priorities, but also the market conditions affecting access options. The access strategy therefore needs to be reviewed to effectively inform decision-making by GoM and DFID going forward.

The Objective

The objective of this assignment is to undertake a comprehensive and evidence-based review of a strategy for sea and air access for Montserrat. Based on international best practice the strategy will set out a vision for adequate and cost-effective access for Montserrat, including potential short, medium and long term actions to achieve this. The strategy will look at any required improvements of the sea and air access infrastructure as well as ways to improve the management and coordination of the current infrastructure.

The Recipient

The Government of Montserrat (Premier's office) and DFID are the main recipients of these services. The strategy will inform the GoM access policy going forward and DFID's support in effectively providing sea and air access. The people of Montserrat and the local private sector will benefit from affordable, reliable access to the island.

The Scope

This will likely be a combination of desk-based fact-finding and analysis, including extended discussions and liaison with local stakeholders (GoM, DFID and private sector). The final report should focus on the most effective use of any UK grant money, maximizing potential for commercial viability, implications on affordability of the service and ways to increase access management and coordination capacity of GoM.

Timeline

The work should commence in w/c 16th May 2016 with the final report due by 17 June 2016, before concluding the contract by 15 July 2016.

Deliverables

The main output of this analysis will be a revised strategy for sea and air access to Montserrat. The strategy will be formulated based on a thorough analysis reflecting the Montserratian context and international best practice. The strategy will recommend actions to upgrade the current access infrastructure if needed, improve GoM capacity of managing and coordinating access effectively, maximise effectiveness of UK aid money and capitalise on opportunities to share risks and costs with the private sector. The strategy will include short, medium and long-term options to that effect and speak to passenger as well as cargo transport. Options should clearly state budget implications and actions to be taken to increase GoM access coordination and management capacity (should be in sufficient detail to feed into drafting of ToRs for potential access coordinator position or other positions if needed).

During the assignment the team will report to the resident Private Sector Development Adviser who will liaise with the Premier's office to facilitate the on-site visit and set up interviews. A draft report for comment from GoM and DFID should be issued 1 week after the on-site visit (by 10th June). This draft report will then be presented (remotely using videoconferencing) to GoM and DFID. The final report addressing any comments coming out of this process should be delivered by 17 June 2016.

Coordination

The key points of coordination will be between PEAKS, DFID and GoM.

Logistics/Security/Health

The work will be carried out by a combination of remote working with one extended visit to the island to fully understand the specific context and history of access. There are no health or security issues associated with providing this technical support. Whilst there are no security issues regarding this assignment whilst working in Montserrat, it is recommended that the DFID Private Sector Development Adviser be contacted before deployment for an update of the situation. DFID has a duty of care to deployed individuals, who in turn must adhere to the DFID travel clearance approval procedure prior to departing.

Payment

DFID will adopt a milestone payment approach for this work, with the most significant amount paid on receipt of a validated final report. An interim payment will be made on mobilisation and production of a draft report, if necessary.

Annex 2 Comparative Islands in the Caribbean and elsewhere

Name/Location/Land Area/Population/Capital	Airports	Seaports	Ferry Services	Direct Long Distance Air Connectivity/ Airlines	Cruise Ship Arrangements
<p>Anguilla, Caribbean, North Atlantic Ocean, 91 km² (35.1 sq. mi), 13500 persons, The Valley</p>	<p>Clayton J. Lloyd International Airport runway 1,665 m in length accommodating moderate-sized aircraft Boeing 737, 757. Altitude 39m.</p>	<p>Blowing Point Port, Road Bay Port. Blowing Point is a shallow harbour handling passenger and leisure craft. An offshore petroleum berth is located at Corito Bay. Road Bay is the commercial port of Anguilla. The Road Bay port has available draft levels of - 4.0 m. A small, purpose built single RO-RO berth was built in 2008/2009 alongside the Main Jetty, which is damaged. Note: the 540m long Captain David Cargo Quay close by on St Marten has an alongside depth of 10.5 m and now houses a 3,000 TEU-container storage area. It serves as a regional cargo (container) transshipment port providing very good access for Antigua.</p>	<p>A regular public ferry operates at least once an hour between Blowing Point in Anguilla and Marigot on the French side of St Martin (France) Anguilla has a new pier located just a couple of minutes from SXM airport. The new pier runs a late night ferry that leaves at 11:30pm (Fery Shuttle Ferry transportation to and from Anguilla is convenient, simple and inexpensive. An alternate, some ferries travel from the Blowing Point Ferry Terminal to the Princess Juliana Airport Dock on the Dutch side of St. Maarten. The fare starts at \$65 one way/\$130 round trip per adult with discounted rates for children. All prices in USD. Departure times are approximately 7:30am. 9:30am., 12:30pm and 4:30pm and at any time upon request. The ferries run all day between the hours of 7:30am and 6:15pm (departing Anguilla). The last return ferry to Anguilla departs St. Martin at 7:00pm. Ferries run approximately every 45 minutes, and the trip takes about 25 minutes.</p>	<p>NO: With no direct flights to Anguilla, visitors from the UK tend to fly via Antigua (British Airways and Virgin Atlantic) and then make the local transfer by small charter plane. Norwegian runs a direct flight from the UK to San Juan in Puerto Rico, from where Seaborne (www.seaborneairlines.com) and Tradewind Aviation (www.flytradewind.com) have daily schedules to the island. From North America most visitors fly to St Maarten (American Airlines, United and Air Canada are among the many airlines serving the route) and then take a boat across to the island. It is also possible to fly via Puerto Rico. International Airport easily accessible by air, through main gateways Puerto Rico, St. Maarten/Martin, Antigua and St.</p>	<p>Star Clipper visits Anguilla, mooring offshore. Larger vessels dock in St Maarten and offer day trips across to Anguilla.</p>

Name/Location/Land Area/Population/Capital	Airports	Seaports	Ferry Services	Direct Long Distance Air Connectivity/ Airlines	Cruise Ship Arrangements
Bermuda , North Atlantic Ocean, 54 km ² (20.8 sq. mi), 64,000 persons, Hamilton	L.F Wade International Airport (runway length 3,000 m)	Hamilton	SeaExpress Ferry Service, main ferry terminal is located at Albuoy's Point in Hamilton.	YES: BA UK, American Airlines, Delta, JetBlue United USA, Air Canada, WestJet Canada	Cruise vessels berth at Kings Wharf and Heritage Wharf
Barbuda forms part of the state of Antigua and Barbuda, Caribbean, North Atlantic Ocean, 160.6 km ² , 1638 persons, Codrington	Barbuda Codrington Airport has a short 500 m runway, altitude 5m	All boats are required to enter in Antigua before continuing to Barbuda, and they must obtain a permit from the Port Authority to do so. Codrington has a small port for the ferry	The Barbuda Express travels between St. John's and Barbuda five days a week	NO: All long distance connections via international airport in Antigua. Daily flights to the USA and a six day a week BA connection to UK, Virgin Atlantic connection to UK	No cruise vessel facilities, nearest are at Heritage quay on Antigua
British Virgin Islands , Caribbean, North Atlantic Ocean, 153 km ² (59 sq. mi), 27,000 persons, Road Town	Terrence B. Lettsome Airport (EIS) runway length 2,164 m.	Ports of Entry: Tortola—Road Town and West End, Jost Van Dyke—Great Harbour and Virgin Gorda—St. Thomas Bay and Gun Creak. Cargo Port, Port Purcell	The cargo dock at Port Purcell is equipped for handling containerized cargo, as well as break-bulk cargo. 244 meters of berth -6.7 m alongside, stands with a clean, tidy and spacious apron.	NO: There are no direct flights to the British Virgin Islands from Europe or the USA. All flights connect through another Caribbean airport such as Antigua, St Thomas, Puerto Rico, St Kitts or St Maarten. The most direct way to arrive to the BVI from North America is via San Juan, Puerto Rico (SJU). Frequent connecting service is offered by Air Sunshine, Cape Air and Seaborne. Travellers from the UK (from London, Gatwick) and Canada may to travel directly to Antigua via VC Bird International Airport.	The Tortola Pier Park is the newest development in the British Virgin Islands, offering an enhanced cruise pier facility and a new shopping centre. The Tortola Pier Park cruise pier can now berth two large ships along side with a maximum tonnage of 180,000 GRT.
Cayman Islands , Caribbean, North Atlantic	Two paved runways 1,524 to	Cayman Brac, George Town	Interisland ferry service only: on Grand Cayman, to connect Rum Point and North	YES: BA (via Nassau) UK, American Airlines, Delta, JetBlue United USA, Air Canada,	Cruise ships drop anchor off of George

Name/Location/Land Area/Population/Capital	Airports	Seaports	Ferry Services	Direct Long Distance Air Connectivity/ Airlines	Cruise Ship Arrangements
Ocean, 264 km ² (101.9 sq. mi), 54877 persons, George Town	2,437 m at Charles Kirkconnell Airport (CB) and at Owen Roberts International Airport (GC)		Sound. The trip takes about 40 minutes each way and departs from the Grand Cayman Beach Suites hotel on Seven Mile Beach.	WestJet Canada, Cayman Airlines National Airline	Town, on the west side of Grand Cayman, and passengers transit to shore via the Port of George Town's fast tenders. A controversial plan to build a new \$150 million cruise ship facility exists.
Falkland Islands , South Atlantic Ocean, 12,173 km ² (4,700 sq. mi), 2,955 persons, Stanley	Two paved runways 1,525 to 2,590 m RAF Mount Pleasant, located to the west of Stanley, functions as the islands' main international airport, because it has a long runway and allows civilian flights.	Wharf at Port Stanley and FIPASS (Falkland Interim Port and Storage System): Situated to the east of the Narrows on the south shore of Stanley Harbour. This facility consists of seven permanently moored barges providing 200 metres of berthing face. The depth of the water varies from 5.7 - 7 metres according to berth. There is a Ro-Ro berth.	No regular interisland service	YES: The Falkland Islands are serviced by two long distance flight routes that provide regular and convenient access to the Islands. LAN is a oneworld partner and connects with international carriers in Europe, North America, Australasia, and Africa. The Ministry of Defence operates non-commercial flights from the United Kingdom	No Cruise Terminal, Passengers are tendered to shore.

Name/Location/Land Area/Population/Capital	Airports	Seaports	Ferry Services	Direct Long Distance Air Connectivity/ Airlines	Cruise Ship Arrangements
Montserrat , Caribbean, North Atlantic Ocean, 101 km ² (39 sq. mi), 4,655 persons, De facto capital: Brades	JA Osborne (runway 600m in length. Altitude 168 m)	Little Bay	Daily/Weekly Ferry service between Little Bay Montserrat and Bryson's Pier Antigua	NO: All long distance connections via international airport in Antigua. Daily flights to the USA and a six day a week BA connection to UK, Virgin Atlantic connection to UK	No Cruise Terminal, Passengers are tendered to shore.
Nevis : the smaller of the two Caribbean islands comprising the nation of Saint Kitts and Nevis, Caribbean, North Atlantic Ocean, 93 km ² , 12, 106 persons, Charlestown	Vance W. Amory International airport, single runway of 1220 m, altitude 4m	The Long Point Port is ideally located on the southern coast of the island, just on the outskirts of Charlestown. Like most modern cargo operation, the port is approximately one (1) mile from the main road and houses Customs officials. approach, dock and depths of 6m - 6.5m	Saint Kitts and Nevis are separated by a shallow 3-kilometre (2 mi) channel known as "The Narrows". Four ferry vessels operate between Charlestown and Basseterre on St; Kitts. St. Kitts is the only country that has 3 operators providing a service for the same route, between St. Kitts and Nevis. An advantage for passengers of this route is that the path is between islands so the water is not too rough compared to an open seas path like in other routes. Also the distance of 11 nautical miles is relatively short. Another advantage of the St. Kitts and Nevis route is that there is price collusion among all ferry operators.	Yes: Some long distance connections to/ from Miami and other regional connections with Dominica, St marten and Puerto Rico	Mini cruise ships dock at the Charlestown tender pier
Saint Helena , Ascension and Tristan da Cunha, South Atlantic Ocean,	Runway of 1,550 metres at Prosperous Bay	Shallow unprotected port at Jamestown - 1.8 to -3.0m	Long distance ferry and cargo service to Capetown SA on RMS St Helena (service ending June 2016)	PLANNED: Scheduled services planned from Johannesburg SA and London UK once Airport at St. Helena becomes operational.	No Cruise Terminal. There is no breakwater in James

Name/Location/Land Area/Population/Capital	Airports	Seaports	Ferry Services	Direct Long Distance Air Connectivity/ Airlines	Cruise Ship Arrangements
420 km ² (162 sq. mi), 5,530 Total persons, 4,255 (Saint Helena only), 1,275 (Ascension and Tristan da Cunha; estimates), Jamestown	Plain St Helena, altitude 616 m			Note St. Helena has no adjacent airport due to its location so has no possibility for short haul air connectivity.	Bay, all visiting cruise ships drop anchor in the bay and passengers are tendered ashore via the ships lifeboats to the landing steps
<p>Saint Barthélemy, is a Caribbean island commonly referred to as St. Bart's, Caribbean, North Atlantic Ocean 25 km², 9035 persons, Gustavia</p>	<p>St. Barthélemy has a small airport known as Gustaf III Airport on the north coast of the island that is served by small regional commercial aircraft and charters. Runway length 650 m, altitude 15m. Reportedly the third most dangerous airport in the world.</p>	<p>Gustavia Port (small port and marina)</p>	<p>Many Inter Inland ferry services operate regularly between St. Martin and St. Bart's</p>	<p>NO: All long distance connections via international airport in St. Marten. The nearest airport with a runway length sufficient to land a typical commercial jet airliner is on the neighbouring island of St Marten Princess Juliana International Airport, which acts as a hub, providing connecting flights with regional carriers to St. Barthélemy.</p>	<p>No cruise vesselfacilities, nearest are on the neighbouring island of St Marten, which acts as a hub</p>

Name/Location/Land Area/Population/Capital	Airports	Seaports	Ferry Services	Direct Long Distance Air Connectivity/ Airlines	Cruise Ship Arrangements
<p>Turks and Caicos Islands, Lucayan Archipelago, North Atlantic Ocean, 430 km² (166 sq. mi), 32,000 persons, Cockburn Town</p>	<p>Providenciales International Airport, 2,807 m runway length</p>	<p>South Dock Grand Turk -7.0 m, South Dock Providenciales- 4.0 m tidal 1.0 m</p>	<p>Several Interisland ferry Services run by TCI Ferry</p>	<p>YES: BA (twice weekly flights via Nassau and Antigua) UK, American Airlines, Delta, JetBlue United USA, Air Canada, WestJet Canada, Bahamas Air, Inter Caribbean Airlines National Airline</p>	<p>Grand Turk Cruise Centre: Carnival Cruise Lines opened a \$50 million facility in 2006 and the site sees about three ocean liners a week.</p>

3.1 Introduction

A number of tourism development plans have been developed for Montserrat, each with different growth assumptions and resultant recommendations made for infrastructure and services in relation to those plans. Due to a close association between access/connectivity and tourism development, the Tourism Masterplans are useful to inform the updated Connectivity strategy, particularly for the future situation (Enhanced Connectivity Strategy).

Section 3.2 provides a summary from the latest data analysis, forecasting and access infrastructure and access service proposals made in the MONTSERRAT TOURISM MASTER PLAN, 2015-2025 Draft Final Report 22nd January, 2016 from Tourism Planning Associates.

Section 3.3 identifies key elements of the preceding Tourism Studies that have been taken into the Montserrat Access / Connectivity Study Review. As a result of the analysis, it is noted that the Review has formed a different opinion on several transport related issues.

3.2 Tourism Masterplan for Montserrat: Current Situation Tourism Demand and Visitor Characteristics

3.2.1 Total Visitor Arrivals

Trends in visitor numbers since 2010 are shown on the following table. About 12,000 visitors are projected for 2015, a figure which has changed little over the last three years.

Year	2010	2011	2012	2013	2014	2015*
Stay-Over Visitors	5,981	5,395	7,310	7,201	8,804	8,200
Excursionists	1,726	1,997	2,606	1,520	1,749	1,800
Cruise Ship Visitors	878	1,114	840	364	184	200
Yacht Visitors	993	1,966	1,371	1,377	1,597	1,800
TOTAL VISITORS	9,578	10,472	12,127	10,462	12,334	12,000

*Source: Statistics Dept., MoFEW, and Consultants * Consultant's projections*

Prior to 2012 the number of stay-over visitors has averaged approximately 6,000.

A significant increase in stay-

over arrivals occurred in 2012 for the 50th Celebrations of Montserrat's Festival, and this impetus was maintained to 2014. A small decrease is projected for 2015, due primarily to the weakening of the Can\$ v the US\$.

Cruise ship visitors have decreased over the last 5 years. Excursionist numbers have varied between 1,500 and 2,500 whereas yacht visitors have varied between 1,000 and 2,000 over the period.

3.2.2 Stay-over Visitor Arrivals

Number of stay-over arrivals by source market for selected years are shown on Table 3.2.

Market	2010	2011	2012	2013	2014	2015*
USA	1,665	1,527	1,950	1,775	2,041	2,200
Canada	404	320	505	516	678	500
U.K.	1,380	1,327	2,148	1,821	2,164	2,200
OECS	1,261	1,133			2,447	1,800
Other Caribbean	998	749			1,081	1,100
Other Countries	273	339	317	498	393	400
TOTAL	5,981	5,395	7,310	7,201	8,804	8,200

*Source: Statistics Dept. MoFEW and Consultants * Consultant's projections*

The main markets are the US, UK and OECS which together account for about three-quarters of all stay-over arrivals. An analysis of the Visitor Entry/Exit cards shows little change in the profile of stay-over tourists to Montserrat over the last 5 years, the more salient findings being:

Just over half (53%) of tourists arrive by air, the balance arriving by sea

About 60% indicate 'leisure' as main purpose of visit; 13% come for business and a further 14% to visit friends and relatives;

Almost 60% stay in private homes, the balance staying in other forms of accommodation....Hotel, Guest House, Apartment, Villa, B&B

Older age profile of tourists with about 40% aged 50yrs or older, very few (14%) under the age of 20 years old.

70% of stay-over arrivals come during the 7 months period, Nov through May

Average length of stay of about 11 nightsthose from the UK staying an average of 15 nights; those from the US staying an average of 12 nights.

Combining information from the 2010/11 Visitor Exit Survey with Visitor Entry/Exit card information, the breakdown of tourist numbers by 'primary' activity engaged in and place of stay is shown on table 3.3:

Motivation/Activity	Accommodation	Numbers*	%
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(v)	Visiting Friends & Relatives - General vacation	Private Homes	4,500	55
(vi)	Business/Official/Conference	Paid serviced accommodation	2,000	25
(vii)	Non MNI Related Vacation	Paid serviced accommodation	1,300	15
(viii)	Other - Study, sports groups	Mainly private homes/un- serviced accommodation	400	5
TOTAL			8,200	100

Source: Consultant's estimates *figures rounded

3.2.3 Excursionist Arrivals

During the last five years, excursionist arrivals have numbered between 1,700 and 2,000; approximately 1,800 are expected for 2015.

Excursionists	2010	2011	2012	2013	2014	2015*
Air	927	978			373	400
Sea	799	1,019			1,376	1,400
TOTAL	1,726	1,997	2,606	1,519	1,749	1,800

Source: Statistics Dept. MoFEW and Consultants * Consultant's projections

An analysis of the Visitor Entry/Exit cards provides a profile of excursionists to Montserrat, the more salient findings being:

Main source markets are the OECS, UK and US, together accounting for about 2/3rds of excursionist arrivals.

Older profile of visitor

'Leisure' is main purpose of visit for 80% of arrivals

60% of excursionists arrive during the 7 months period, Nov through May

3.3 Tourism Masterplan for Montserrat: Current Situation Access

3.3.1 Size of the Tourism Sector and Performance

In 2015, just over 8,000 stay-over tourists visited Montserrat. In addition there were some 1,800-yacht visitors and a similar number of excursionists. Total expenditure by all visitors was an estimated EC\$22 million.

About three-fifths (60%) of tourist arrivals come primarily for vacation/leisure purposes. However, this does not mean that all are non-Montserratian. In fact,

a significant proportion is Montserratian related, as evidenced by the proportion of tourists staying in private homes.

Allowing for the above, non-Montserratian related vacation visitors' number about 1,300 yearly, a figure that has changed little in recent years. Similarly, the number of excursionists is at the same level as in 2010, some 5 years ago. Although never big, cruise visitor numbers have also dropped sharply.

Constraints to Growth

In 2012 the transport constraints inhibiting the growth of tourism to the island were reportedly:

Inadequate sea connectivity – ferry schedules, length of journey; and

Poor 'tourism infrastructure' – airport terminal, road signage, etc.

3.3.2 Air and Sea Access Transport Services

Visitor arrivals by mode of transport are shown in Table 3.5.

Table 3.5. Visitor Arrivals by Mode of Transport 2007 – 2015									
Mode of Transport	2007	2008	2009	2010	2011	2012	2013	2014	2015*
A. Air									
Stay-over arrivals	7,667	6,800	5,599	5,070	4,067	4,128	4,454	4,074	4,100
Excursionists	903	784	617	799	978	1,268	360	373	400
Total A	8,570	7,584	6,216	5,869	5,045	5,396	4,814	4,447	4,500
B. Sea									
Stay-over arrivals	79	560	712	911	1,328	3,182	2,747	4,730	4,100
Excursionists	65	175	407	927	1,019	1,338	1,160	1,376	1,400
Total B	144	735	1,119	1,838	2,347	4,520	3,907	6,106	5,500
Total A + B	8,714	8,319	7,335	7,707	8,720	9,916	8,721	10,553	10,000

Source: Statistics Dept., MoFEW * Consultant's estimates.

Currently, the split between air and sea modes of transport for stay-over arrivals is about 50:50.

However, as shown on Table 2.5 above, the numbers of tourists arriving by air has declined from just under 8,000 in 2007 to around 4,000 in 2011 and has remained at this level since then. A major reason for the drop in arrivals by air was the cessation by Winair of its services to Montserrat in 2011. The other reason has been the reduced schedule provided by ABMAIR (a sister company of SVG Air).

In 2011 an all-year round ferry service (as opposed to 7 months in 2010) was introduced. As a result, tourist arrivals by sea increased significantly in 2012 (also boosted by the 50th Celebrations of Montserrat's Festival), and have increased since then.

The number of excursionists arriving by air has decreased over the years, whereas those arriving by sea have increased.

Generally speaking, some passengers are price sensitive and will change mode of travel because of price. The ferry offers a lower price but a much longer journey time. When journey time is not an issue, particularly for stay-over visitors, the ferry becomes the preferred option as borne out in the statistics.

3.3.3 Air Access

Scheduled Air Services

Carrier	Type of Aircraft	Capacity (No. of seats)	Arriving from	Departing to	Frequency
Montserrat Airways Limited	BN2 Islander	9	Antigua (scheduled)	Antigua (scheduled)	6 movements daily (average)
ABMAIR	BN2 Islander	9	Antigua (scheduled)	Antigua (scheduled)	2 movements daily

Montserrat Airways and ABMAIR provide scheduled air services. Between them they provide 4 flights daily in each direction between Antigua and Montserrat.

Passenger Movements

Year	2010	2011	2012	2013	2014	2015*
No. of Aircraft movements	2,837	3,738				
No. of Arriving Passengers	10,880	8,821	8,899	7,831	6,574	6,700
No. of Departing Passengers	11,180	9,789	9,396	9,106	7,185	7,530

*Source: Statistics Dept., MoFEW * Consultant's estimates.*

Comparative Air Fares

The airfare for the trip from Antigua to Montserrat is US\$116.0 (about EC\$300), including taxes and other charges. As shown on Table

3.8, airfares to short-haul destinations vary widely. Excluding both the premium and promotional fare, an analysis of fares to short-haul destinations between the traditional Caribbean islands destinations puts Montserrat in the same 'ballpark' of fares per minute of travel time.

That the Antigua – Montserrat fare is reasonably competitive is partly due to these seat guarantees provided by the GoM. However, in this respect it is worthwhile noting that other intra-Caribbean routes also receive subsidies/seat guarantees.

Hub	Fare (USD)			Flight Time (min)	Fare/Minute (USD)
	Base Fare	Taxes/Charges	Total		
A. St. Maarten To:					
St. Bart's (SBH)	95.0	61.9	156.9	15	10.5
Saba	65.0	47.9	112.9	15	7.5
B. Antigua To:					
Barbuda (BBQ)**	n/a	n/a	64.8	20	3.2
Montserrat**	n/a	n/a	116.0	20	5.8
Dominica	150.0	70.0	220.0	40	5.5
St. Kitts	72.3	73.0	145.3	30	4.8
C. Other:					
Dominica -Guadeloupe	85.0	23.9	108.9	30	3.6
St. Lucia -Martinique	109.0	75.4	184.4	25	7.4

Sources: WINAIR and LIAT websites as at Sept 2015 **FlyMontserrat

It is recognized that the fare per minute of flight time does not give the whole picture when looking at comparative fares between destinations. Factors such as size of aircraft, airport landing charges and subsidies etc, are not taken into account. Nevertheless, from the passenger perspective, it is the fare and time taken which matters. In this context the fare structure to Montserrat is competitive.

Air Access Issues

Based on the findings of previous studies (Access Strategy Report, 2011), discussions with tour operators and market representatives in 2012 and recent meetings (August, 2015) with stakeholders in Montserrat, the major air access issues were:

Fares considered too high for the excursionist market from Antigua

Reluctance by potential visitors to use the islander

Seen as too small, unsafe

Not possible to make through bookings from source markets

Fly Montserrat and SVG services not included in the major airlines' GDS (Global Distribution Systems) or the LIAT network.

3.3.4 Sea Access

Passenger Movements

Year	2010	2011	2012	2013	2014	2015*
No. of Ferry Boat movements	218	458	460			
No. of Arriving Passengers	3,174	4,676	7,116	7,595	10,953	11,650
No. of Departing Passengers	2,981	3,975	5,020	7,836	9,842	11,430

Source: Statistics Dept., MoFEW * Consultant's estimates.

Scheduled Services

Since 2011/2012, the ferry service operates all year round

Operator	Type of Ferry Craft	Capacity (No. of seats)	ANU-MNI	Frequency
M&M Transportation	Monohull passenger ferry	120	Sun, Wed & Fri Thurs & Sat Mon & Tues (Except December 15 – January 15 and St. Patrick's week when it runs 6 days weekly.)	0900 & 1900 1800 – No service

The one-way journey takes about 90 minutes.

Fares

The fare is EC\$ 150 (approx. US\$ 55.5) one-way

Ferry Access Issues

Infrequent service

Very slow making the journey - one way 90 minutes

Although possible to make a day trip from Antigua to Montserrat three days during week (Sun, Wed and Fri) the departure timings from both Antigua and Montserrat leave very little time to see the island. The ferry departs at 0900 from ANU and arrives in MNI at 1030. The return trip departs at 1630, which means an excursionist has only about 4 hours on island as passengers are asked to check-in 90 minutes in advance of the departure time. Moreover, it should be noted that the departure time of the ferry (0900) from Antigua does not facilitate cruise ship passengers wishing to travel to Montserrat, as they rarely disembark the cruise ship before 0830/0900.

Passengers have expressed numerous other complaints about their treatment and the quality of service.

New Ferry Service

A new hybrid (passenger and cargo) ferry that would reduce travelling times to/from Antigua is proposed.

3.4 Tourism Masterplan for Montserrat: Current Situation Yachting and Cruise Ships

3.4.1 Yachting Arrivals

About 420 yacht arrivals are projected for 2015, with 1,800 visitors, representing an average of just fewer than 4.5 visitors per yacht. Over the years there has been no significant increase in the number of yacht arrivals to Montserrat.

Year	2010	2011	2012	2013	2014	2015*
Yachts	216	352	327	346	368	420
Visitors (including crew)	993	1,966	1,371	1,377	1,597	1,800

* Consultant's projections

3.4.2 Cruise Ship Passenger Arrivals

Over the last five years there have been fewer cruise ship calls to the island.

Year	2010	2011	2012	2013	2014	2015*
Cruise Ship Calls	4	3	5	4	2	
Cruise Passengers	878	1,114	840	364	184	

*Source: Statistics Dept. MoFEW and Consultants * Consultant's projections*

3.4.3 Yachting Environment

Conveniently located in the middle of the chain of eastern Caribbean islands, Montserrat is an ideal stop-off point for yacht cruising the Caribbean between Nevis, Guadeloupe and Antigua. Despite its strategic location, the yachting sector in Montserrat is underdeveloped compared with neighbouring destinations. The most popular anchorage is Little Bay, and to a lesser extent Isles Bay and Rendezvous Bay. There is a Yacht Club at Isles Bay. Not much more than 400 yachts visit yearly.

Currently, there is no protection for yachts anchoring in Little Bay (which is exposed to high seas, particularly in the peak tourism season), with no safe storm storage areas. Montserrat also loses yachting business because it lacks the infrastructure needed to support a thriving yachting industry, namely, marinas, boatyards. It also suffers from adverse publicity regarding allegedly unwelcoming treatment at Customs and Immigration and high clearance fees.

At present visiting yachts have to anchor in Little Bay (or Rendezvous Bay/Isles Bay) where they can be exposed to rough seas. There are no moorings and no suitable or acceptable bathroom/shower facilities or amenities such asicedelivery,garbage removal, laundry, and boat bottom cleaning services.

3.4.4 Cruise Ship Environment

Conveniently located in the middle of the chain of eastern Caribbean islands, Montserrat is a potential stop-off point for cruise ships in the Caribbean.

Currently, there is no protection for Cruise ships anchoring in Little Bay (which is exposed to high seas, particularly in the peak tourism season), with no safe storm anchorage area.

3.5 Tourism Masterplan for Montserrat: Current Access/Connectivity Infrastructure

3.5.1 Airport Facilities

The John A. Osborne Airport has a runway length of 600m (1,968ft) in length, capable of accommodating the Twin Otter (capacity: 18 seats) and smaller aircraft. Extension of the existing runway is constrained by the present hospital location and the nature of the surrounding terrain. The airport is equipped with modern air traffic control technology, Customs and Immigration facilities, and a small cafe.

The departure lounge can accept around 30 passengers at any one time. (Equivalent to about five flights per hour, assuming six-seater aircraft). This is more than adequate for the existing volume of passenger traffic.

Issues and Constraints

Existing capacity bottlenecks in the inward immigration area restrict the number of flights per hour to three for six-seater planes (compared with a theoretical runway capacity of 30 flights per hour). Currently, there is only one immigration officer to handle arrivals and departures. Capacity could be increased through digitalization of passport processing.

Other constraints are the limited facilities for screening outbound baggage and the customs procedures for inbound baggage.

There are no aircraft hangar or fuelling/re-fuelling facilities.

Carparking provision is adequate, but the entire landside area presents a less than favourable image to residents, tourists and business travellers. This is most noticeable in the unkempt appearance of the carpark. The airport terminal is also in need of maintenance. Cracks are apparent on the access stairs to the roof of the terminal building.

Airport not fully utilized

Limiting the airport to day use only, means an underutilized asset. Especially in the winter months FlyMontserrat cannot land after 1745, which makes getting afternoon arriving passengers from Antigua to Montserrat challenging. The relatively low cost of certifying the airport for night use would improve the passenger experience to Montserrat as well as making the airport more viable, and eliminating the necessity of night stops in Antigua.

3.5.2 Seaport Facilities

Montserrat's only operational port facilities are located at Little Bay (although the Plymouth jetty is also used for sand exports). The current facility comprises a jetty and relatively narrow wharf that links the jetty to the warehousing and the port immigration building.

Issues and Constraints

The current jetty was originally built as an emergency facility and was intended to be temporary. Due to the lack of a breakwater, there is no protection from adverse sea conditions (which tend to be experienced during the peak tourist season), with resulting delays in cargo, cruise and ferry traffic, sometimes for weeks at a time.

3.6 Tourism Masterplan for Montserrat: Growth Scenarios and Recommended Growth Path

3.6.1 Population and GDP

Increasing living standards is key to supporting a thriving and viable population.

Using GDP per head as an indicator of living standards, residents have experienced reasonably stable standards of living over the last few years.

Year	2010	2011	2012	2013	2014	2015*
GDP @ market prices (EC\$000's)	150.0	172.0	171.3	163.2	168.1	168.0
GDP @ constant 2015 prices (EC\$000's)	147.8	155.9	161.4	165.4	169.5	168.0
Population	5,020	4,924	4,936	4,959	4,976	5,000
GDP per head @ constant 2015 prices (EC\$000's)	29,440	31,660	32,700	33,350	34,060	33,600

*Source: CSO Montserrat, ECCB and Consultant's estimates*projections*

The increasing population and living standards implications for economic growth are shown on Table 3.14.

Table 3.14. Scheduled Air Services			
Scenario	2015	2025	Avg Yearly Growth Rate %
A. Low Growth			
Population	5,000	5,500	1.0
GDP per Capita (EC\$)* GDP EC\$(000s)	34,000	37,500	1.0
	170,000	205,000	2.0
B. Medium Growth			
Population	5,000	6,500	2.5
GDP per Capita (EC\$)* GDP EC\$(000s)	34,000	41,000	2.0
	170,000	265,000	4.5
C. High Growth			
Population	5,000	8,000	4.7
GDP per Capita (EC\$)* GDP EC\$(000s)	34,000	42,500	2.5
	170,000	340,000	7.2

*At constant 2015 prices Note: figures rounded

Scenario A represents the 'low growth' scenario... basically a small improvement in standards of living, coupled with a small increase in the population. [Increased living standards by an average growth rate of about 1% yearly, with a similar growth rate in population].

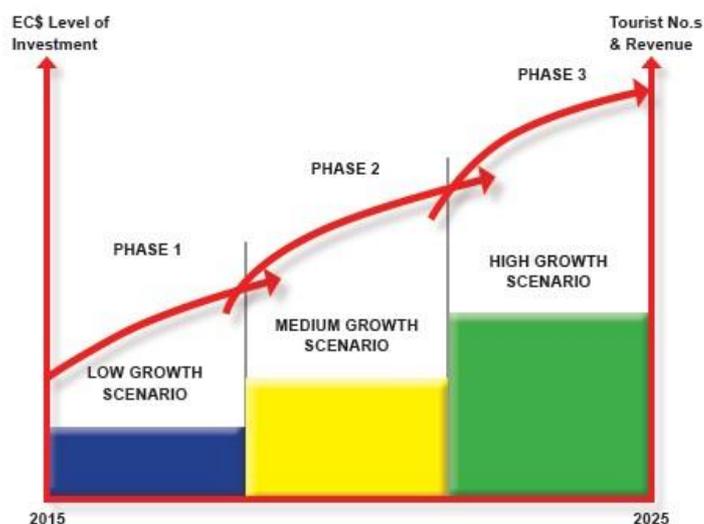
Scenario B represents the 'medium' growth scenario, with an average annual GDP growth rate of 4.5% over the next decade required to support a population of 6,500 people by 2025 with an improving standard of living. Under this scenario, the size of the economy increases by just over half (55%) over the next decade. [Increased living standards by an average growth rate of about 2% yearly, with a population growth rate of approximately 2.5% year].

Scenario C represents the 'high growth' scenario, with an average GDP growth rate of approximately 7.2% yearly over the next decade required to support a population of 8,000 by 2025 with an increasing standard of living. Under this scenario, the economy doubles in size over the next decade. [Increased living standards by an average growth rate of 3% yearly, with population growth rate of 4% yearly].

Figure 6 Montserrat Tourism Masterplan, 2015-2025
(GoM/Tourism Planning Associates)

3.6.2 Tourism and Industry Growth Path

It should be noted that the low, medium and high growth scenarios are not



mutually exclusive. Overtime, and depending on both external and internal conditions, the low growth scenario could evolve into the high growth scenario as illustrated on the following diagram.

Initially, the industry will follow the Low Growth Scenario – at least until the new ferry is in services. With this significant improvement to the access situation, the platform will be established for moving to the Medium Growth Scenario involving the expansion of the tourism product - increased stock of accommodation, more things to-see-and-do etc. With growth momentum generated, the stage is set for moving to the High Growth Scenario.

3.6.3 Growth Scenarios

Two extreme possibilities arise in considering future scenarios for tourism on Montserrat. At one extreme there is the 'low growth' scenario which might be interpreted as what would be likely to happen if, with the exception of the new ferry, no initiatives were undertaken and tourism development continued to be constrained by lack of investment, shortcomings of the existing infrastructure, minimal destination marketing etc. At the other extreme is the rate at which the industry could grow if sufficient public and private capital investment was available to develop the necessary supporting infrastructure, establish the required tourism operations, train personnel and undertake significant destination marketing campaigns. Between these lie a number of realistic scenarios reflecting the Government of Montserrat's socio-economic, financial and environmental objectives for the island.

Low Growth – Scenario A

Under this scenario, it is assumed that, with the exception of the new ferry coming on-stream, no other significant initiatives are taken to rejuvenate the tourism sector. In essence, things continue much as they are and in consequence, the likely evolution of tourism to Montserrat is projected to be as follows:

Stay-over arrivals to increase to just over 13,000 over the period 2015 - 2025, mainly composed of Montserratians returning to visit family and friends

About 7,000 tourists visiting friends and relatives

About 4,000 non-Montserratian related stay-over arrivals visiting for

General vacation

Hiking tours

Visit to 2nd home, and

Short breaks by sports, church, and other special interest groups

About 2,000 Business and Conference visitors. ...More or less same level as at present

Cruise ship visitors not exceeding 1,000 yearly, depending on number of vessels including Montserrat on their itineraries

Yachting visitors fluctuating between 1,000 and 2,000 yearly, as in the past decade

Excursionists increasing from just fewer than 2,000 at present to about 10,000 in response to the improved sea access.

Medium Growth Scenario – Scenario B

The thrust of the Medium Growth Scenario is to re-establish tourism as the ‘driver’ of the economy, fulfilling the role it had until the volcanic eruptions some 20 years ago.

The product development initiatives designed to attract increasing numbers of stay-over tourists and excursionists include:

Public Sector Access and Infrastructure Investment

Coming on-stream of a **dedicated fast passenger/cargo ferry** from last quarter of 2017, providing 3 crossings daily from Antigua to facilitate stayover and excursionist visitors.

Provision of a breakwater at Little Bay to provide shelter for the ferry and sheltered moorings for yachts

Leasing of a Twin Otter to increase and improve air access capacity

Placement of 30 moorings and construction of required on-shore facilities at Little Bay to attract yachting visitors

Relocation of the cargo related offices and warehouse facilities to Carr’s Bay.... leaving the area at Little Bay available for touristic development

Cruise visitor projections for Scenario B (7,250 excursionists) are based on the assumptions of an average ship pax of 300, of which 80% come ashore; 150 crew members of which one-third come ashore and 25 annual cruise ship calls by 2025.

Under Scenario B, visitor projections are shown on the following table.

Table 13.1. Scenario B - Tourism Growth Projections		
Metric	Numbers	
	2015	2025
Year	2015	2025
Total Stayover	8,200	23,000
VFR (staying in private homes)	4,500	8,000
Business/Conference	1,950	4,000
Non-MNI Related Vacation	1,250	8,600
Non-MNI Related Residential	200	400
Other (Sports group etc)	300	2,000
Yacht Visitors	1,800	10,000
Cruise Visitors	200	7,250
Excursionists	1,800	15,000
Total Visitor Spending EC\$000'S	22,000	77,000
Bed nights in 'paid service' acm	20,000	73,000
Rooms Required @ 40% occupancy	140	500
Direct Employment	250	400 to 600

Source: Montserrat Tourism Masterplan, 2015-2025 (GoM/Tourism Planning Associates) Note: figures rounded

Under Scenario B, total visitor expenditure is projected to increase from an estimated EC\$22M in 2015 to EC\$77M by 2025 in terms of constant 2015 money values. The number of 'market ready' rooms required is 500 by 2025.

High Growth Scenario – Scenario C

The High Growth Scenario can be interpreted as the rate at which tourism could expand if sufficient public and private sector capital investment was forthcoming to improve the infrastructure, expand the tourism product, increase the accommodation stock, undertake a sustained destination marketing campaign etc. However, it should be noted that this High Growth Scenario is not the ‘the sky is the limit’ scenario with unlimited public and private investment funds available. It is a scenario, which takes cognisance of:

Montserrat’s limited absorption capacity...in terms of availability of skills, supply side constraints of housing, medical facilities, schools etc

Limitations on the number of ‘green field’ sites for development because of location, ownership issues etc

Lessons of recent experience with regard to tourism development planning, viz:

Very limited resources available to the private sector in Montserrat for investment

Private sector in Montserrat does not have the resources to partnership with Government in mitigating risk where major infrastructure projects are involved.

Attracting private sector investment to Montserrat for mega or even medium sized flagship resorts is exceptionally difficult in today’s economic/financial climate.

Firstly, there are many attractive tourism investment opportunities in more established islands such as Anguilla.

Secondly, because of uncertainties surrounding the Volcano, the provision of reliable air and sea access, and a seaport exposed to rough seas, which can disrupt services for considerable periods during the year, Montserrat would be considered a very risky investment proposition, offering greater uncertainty with regard to returns and costs than elsewhere

Depending on one mega tourism development to rejuvenate the industry is, for the most part, ‘a lost cause’.

In addition to the public and private sector access, infrastructure and product development investments outlined under Scenario B, the High Growth Scenario would involve the following additional initiatives:

Public Sector Infrastructure Investment

Improvements to the Jetty at Little Bay

Improvements to the Jetty at Plymouth facilitating:

Emergency landings if seas too rough at Little Bay

Access by sea for tours of Plymouth

Additional moorings for yachts

Marina and fishermen's village at Little Bay

Under this scenario, visitor projections are shown on the following table.

Metric	Numbers	
	2015	2025
Year	2015	2025
Total Stayover	8,200	23,000
VFR (staying in private homes)	4,500	8,000
Business/Conference	1,950	4,000
Non-MNI Related Vacation	1,250	8,600
Non-MNI Related Residential	200	400
Other (Sports group etc)	300	2,000
Yacht Visitors	1,800	10,000
Cruise Visitors	200	7,250
Excursionists	1,800	15,000
Total Visitor Spending EC\$000'S	22,000	77,000
Bed nights in 'paid service' acm	20,000	73,000
Rooms Required @ 40% occupancy	140	500
Direct Employment	250	400 to 600

Source: *Montserrat Tourism Masterplan, 2015-2025 (GoM/Tourism Planning Associates)*

Cruise visitor projections for Scenario B (7,250 excursionists) are based on the assumptions of an average ship pax of 300, of which 80% come ashore; 150 crew members of which one-third come ashore and 25 annual cruise ship calls by 2025.

For Scenario C, 10,000 cruise visitors are projected based on the assumptions of an average ship pax of 300, of which 80% come ashore; 150 crew members of which one-third come ashore and 34 annual cruise ship calls by 2025.

Day trips will come primarily from stay-over tourists in Antigua and to a lesser extent from cruise visitors to Antigua and stay-over tourists to St. Kitts & Nevis.

3.7 Tourism Masterplan for Montserrat: Access Service Proposals

3.7.1 New Ferry Service

DFID is in the process of commissioning of an appropriately designed passenger and cargo ferry, which will be domiciled in Montserrat to serve the island's economic, security, and emergency needs. The estimated cost is GBP 3.6M. The approximate timelines are as follows:

1. Prospectus issued by DFID by Oct, 2015
2. Award of tender in Jan 2016

3. 18 months construction and commissioning period – ferry in service by third quarter 2017

It is envisaged that the ferry will provide access services for the following distinct market segments:

1. Stayover visitors to Montserrat, whether for VFR, business, or conference
2. Stayover visitors for cultural events, sports or church
3. Day visits by residents of neighbouring islands...Antigua, Guadeloupe primarily
4. Day visits by stayover visitors on neighbouring islands...Antigua, Guadeloupe, primarily
5. Day visits by cruise visitors to neighbouring islands...Antigua particularly
6. Speciality day tours around Montserrat for groups.

The levels of demand generated from the various market segments will, of course, depend on the size of the markets, the ferry schedules, and cost of travel

3.7.2 Improvements to Access Services and Visitor Facilitation under Growth Scenario B

Some 23,000 stay-over arrivals and 15,000 excursionists are targeted by 2025 under the medium growth scenario B. To achieve this increase there will need to be seamless air connections at the gateway(s) and air-sea intermodal access between the islands in the region and Montserrat. The essence of this is an improved quality of service and minimized elapsed time for the passenger between arrival at V.C. Bird International Airport or Bryson's Quay in Antigua and Montserrat. The key elements of this are:

SEA-BRIDGE CONNECTIVITY

Morning schedules from Antigua to facilitate excursionists and cruise ship passengers making day trips to Montserrat

May necessitate later departure on certain days to facilitate cruise ship passengers who normally don't disembark the cruise ship until 0900 -0930

Afternoon schedules from Antigua to facilitate arriving international and regional tourists destined for Montserrat.

Afternoon departure schedules from Montserrat to facilitate departing stay-over tourists make their regional/intercontinental connections and returning excursionists (including cruise passengers).

Special range of fares to stimulate different niche markets – groups, sports clubs etc.

Service to Guadeloupe, tapping the large resident and stay-over visitor market.

Seek support at the OECS level for a sub-regional ferry service initiative, which will connect the Leeward Islands with the Windward Islands through Guadeloupe and develop intermodal links with LIAT for through-travel.

Appointment of a full time tourism/marketing/promotions representative in Antigua to actively canvass and work collaboratively with tour operators and carriers to meet minimum load factor targets on the ferry.

AIR-BRIDGE CONNECTIVITY

Twin Otter schedules to be included in the airline GDS to facilitate advance bookings.

Twin Otter schedules to be included in LIAT and/or WINAIR networks.

Schedules from/to Antigua to link with arriving/departing regional/intercontinental flights.

Provide a condition-based subsidy only for a limited number of scheduled flights to operate in St. Kitts and Guadeloupe's gateways during specific periods in the year, for a maximum period of two years. This will provide support for the development access through these alternative gateways. The subsidy support must be based on a strong tourism-led marketing programme.

Spearhead efforts for a study to be sponsored by the Organisation of Eastern Caribbean States (OECS) on passenger facilitation at regional hub airports. Initiate action for funding the recommendations to ensure long-term sustainability of quality service.

Appointment a full time tourism/marketing/promotions representative in Antigua to actively canvass and work collaboratively with tour operators and carriers to meet minimum load factor targets on the airlines.

VISITOR FACILITATION

Agreement with Government of Antigua for departure tax exemption for day trips to Montserrat

LIAT and/or WINAIR interline arrangements for seamless transfer at V.C. Bird International Airport for flights to/from Montserrat

Collaborate with the Government of Antigua for the removal of in-transit security screening in order to enhance facilitation

Reduce the check-in processing times for both air and sea passengers

In Montserrat, introduce two lines for processing arrivals (visitors and residents)

In cooperation with Government of Antigua, provide appropriate landside facilities for processing and accommodation of ferry passengers at Bryson's Quay.

Improve on-line process of obtaining visa. On-line, visa arrangements are marketed as requiring only 24 hours, but this is not guaranteed

Provide an ATM and/or Bureau de Change at Little Bay. Visitors arriving by sea as well as yachts people need a facility to obtain local currency.

Introduce duty free outlets for departing visitors

3.8 Tourism Masterplan for Montserrat: Yachting and Cruise Ship Proposals

3.8.1 For Yacht Traffic

The main recommendations are for (a) the installation of mooring buoys and other and other facilities/amenities for yachts facilities at Little Bay and, to a lesser extent at Rendezvous Bay; and with an increased number of visiting yachts, (b) the development of a marina and ancillary services.

Moorings and Other Facilities

Placement of mooring buoys;

Clean washing and shower facilities;

Encouragement of amenities such as ice delivery, garbage removal, laundry, and hull cleaning services;

ATM machine at Little Bay

Improved immigration facilitation on arrival for yacht's people visiting Montserrat

Increased marketing of Montserrat to the yachting fraternity.

Estimated cost of providing moorings buoys, washing, shower and other facilities such as,icedelivery, garbage removal, laundry and other facilities: EC\$150,000.

It should be noted that Shamrock Moorings Plus was established to provide a full-service mooring operation on Montserrat, offering safe mooring for vessels not exceeding a maximum weight of 10 metric tons or maximum length of 45 feet (plus anchorage options) for visiting sailboats and yachts at Little Bay and Rendezvous Bay, together with convenient amenities such as ice delivery, garbage removal, laundry, and boat bottom cleaning services.

This project (which received financial support from the MTB through the Tourism Challenge Fund) would have been the first and only mooring business of its kind on Montserrat. Pending approval by the Port Authority, this project is currently stalled.

3.8.2 For Cruise Ship Traffic

No specific recommendations are made.

3.9 Tourism Masterplan for Montserrat: PROPOSALS TO DEVELOP AND IMPROVE THE ACCESS INFRASTRUCTURE

The proposed infrastructure improvement requirements are as follows:

3.9.1 Provision of a Breakwater at Little Bay

To provide shelter for the ferry and sheltered moorings for yachts and subsequent development of a marina, a breakwater is necessary. It would extend into the sea from Rendezvous Bluff, the precise location to be determined.

Actions and Indicative Costs

An indicative cost estimate for planning and construction of the breakwater is EC\$ 25M (GBP17M)

3.9.2 Moorings for Yachts and Facilities

At present visiting yachts have to anchor in Little Bay (or Rendezvous Bay/Isles Bay). There are no moorings and no suitable or acceptable bathroom/shower facilities or amenities such as ice delivery, garbage removal, laundry, and boat bottom cleaning services.

Placement of moorings and construction of required on-shore facilities at Little Bay and Isles/Foxes Bays are required.

Actions and Indicative Costs

Actions required and estimated costs are:

Placement of mooring buoys;

Clean washing and shower facilities;

Services such as ice delivery, garbage removal, laundry, and hull cleaning services;

Provision of moorings buoys, washing, shower and other facilities such as ice delivery, garbage removal, laundry and other facilities: EC\$150,000.

3.9.3 Marina and Fishermen's Village at Little Bay

With the development of the yachting product, a marina would be warranted to further develop the product, as part of a wider product concept of a fisherman's village.

Actions and Indicative Costs

A development and financial/economic feasibility plan for the construction of a marina and fishermen's village will be required initially. Fees and direct expenses for the formulation of the plan is likely to be in the region of EC\$125,000. The cost of the marina and village is likely to be in the region of EC\$ 20 to EC\$25M.

3.9.4 Improvements to the Jetty at Little Bay

A number of improvements to the jetty at Little Bay are required to improve embarkation and disembarkation and also to reduce possibility of damage to the new ferry from surges.

Actions and Indicative Costs

Improvement costs are likely to be in the region of EC\$ 300,000.

3.9.5 Improvements to the Jetty at Plymouth

To provide for emergency landings if seas too rough at Little Bay and also to provide access by sea for tours to the proposed Plymouth Volcano Reserve, improvements to the jetty at Plymouth are necessary.

Actions and Indicative Costs

Improvement costs are likely to be in the region of EC\$300,000

3.9.6 Relocation of the Cargo Related Offices and Warehouse Facilities to Carr's Bay

As part of the overall plan for Little Bay to be a Tourist Centre, the relocation of the cargo related offices to Carr's Bay is recommended, leaving the area at Little Bay available for touristic development.

Actions and Indicative Costs

Relocation costs are likely to be in the region of EC\$500,000.

3.10 Relevance to the Montserrat Access/ Connectivity Strategy

3.10.1 Brief Comments on Tourism Masterplan Analysis of Existing (Access) Situation

The recent Tourism Masterplan⁷⁹ traffic and forecasts underpin the development / review of the Montserratian access strategy, in particular the Enhanced Connectivity Strategy (ECS).

The ratio of tourists to 'normal' Montserratian ferry crossing passengers has not been identified. Although tourist passengers have mentioned a crossing time of 1.5 hours as being too long, if a fast ferry (1 hr. crossing) is to operate on the lifeline route, rather than a conventional ferry, then it is likely to require a specific 'tourism subsidy' since to provide *basic access* for Montserratians on this route a crossing time of 1.5 hrs. might well be acceptable. The question then arises to what extent should GoM subsidise foreign tourists on this route. One factor restricting the number of annual yachts and cruise ship calls may be the lack of a protected harbour at Little Bay, another may be the

79 Montserrat Tourism Masterplan, 2015-2025 (GoM/Tourism Planning Associates)

lack of tourism industry support facilities for such traffic. Although provision of a safe harbour at Little Bay is recommended, it is likely that investments in one component should not take place without investments in the other.

Some non-infrastructure constraints are mentioned at John A Osborne Airport, which could be attended to by the Access Coordinator (specifically C&I issues).

Issues of Hangerage and refuelling facilities are addressed elsewhere in the Review.

Issue of through-bookings from sourcemarkets needs to be addressed during high-level consultations between Antigua and Montserrat.

Size of Aircraft operating on the lifeline route: many passengers use (similar) small charter /scheduled flights worldwide without mishap. Safety is not apparently a major issue.

The economic case for extending airport operations into dusk and at night-time could be analysed. Intuitively the case for slight extension of airport operating hours and permission for Medevac flights at JA Osborne Airport, *subject to full compliance with any additional safety requirements*, appear to be a stronger one. That would also assist tourist connectivity in Montserrat with late arriving long-haul flights in Antigua, for instance. Present runway utilisation at JA Osborne is very low.

The Review concurs with the comment about the lack of a breakwater, and a lack of protection from adverse sea conditions for a large part of the year. The current situation remains unacceptable for a lifeline passenger and cargo facility.

3.10.2 Brief Comments on Tourism Masterplan Growth Scenarios

A phased development strategy appears sensible, noting that population and GDP growth rates are low. This will, in particular, impact the freight traffic projections, since there is a close linkage between GDP growth and containerisation growth. The proposed Tourism industry growth path appears sensible and serves as a guide for the Montserrat Enhanced Access/Connectivity Strategy.

Scenario A envisages Cruiseshipvisitorsnotexceeding1,000(approximately 3 calls at Little Bay). This is presumably predicated on the lack of a breakwater at the Port. The medium Scenario B envisages approx. one cruise ship call a month at Little Bay, which would need on-shore tourist handling facilities for 300 pax per visit.

Under the Central Scenario, some key improvements have been suggested (and commented below)

Coming on-stream of a dedicated fast passenger/cargo ferry from last quarter of 2017, providing 3 crossings daily from Antigua to facilitate stayover and excursionist visitors: re-instatement of the life ferry route will take place in mid-2016, the length of the ferry crossing needs to be under 1.5 hrs. The number of crossings should be in line with market demand, although a consistent minimum weekly frequency should be provided.

Provision of a breakwater at Little Bay to provide shelter for the ferry and sheltered moorings for yachts- a High Priority for lifeline ferry operation and for lifeline RoRo cargo traffic (a safety issue)

Leasing of a Twin Otter to increase and improve air access capacity: lifeline route air service tenders do not specify aircraft type: let the market decide

Placement of 30 moorings and construction of required on-shore facilities at Little Bay to attract yachting visitors: This should not be located in the main port area at Little Bay, but away from it, in line with the local development plan. Private sector co-financing would be ideal.

Relocation of the cargo related offices and warehouse facilities to Carr's Bay... leaving the area at Little Bay available for touristic development: this would be expensive and the case has not been made for a changed cargo facility location, even in the longer term.

3.10.3 Comments on Tourism Masterplan Access Service Proposals

It is too early to decide on whether a purpose built ferry should be provided. The recent tender process will engage a new ferry operator (for a limited short term period) for the lifeline route with performance incentives within the contract. The next logical step would be monitor operations, and to encourage timetable linkages at Antigua to build traffic. A second step may to refine contractual arrangements to increase performance incentives (and thereby reduce subsidy levels).

Comments on the Tourism Masterplan proposals are appended below.

SEA-BRIDGE CONNECTIVITY

Scheduling optimisation- to be assisted by the Access Coordinator.

Service to Guadeloupe, tapping the large resident and stay-over visitor market. The prospects for this service should be examined by the experienced Tourism Sector professionals

Seek support at the OECS level for a sub-regional ferry service initiative, which will connect the Leeward Islands with the Windward Islands through Guadeloupe and develop intermodal links with LIAT for through-travel: longer term proposal

Appointment of a full time tourism/marketing/promotions representative in Antigua to actively canvass and work collaboratively with tour operators and carriers to meet minimum load factor targets on the ferry. - Alternatively provided incentives for existing tour operators on Antigua and closely relations with experienced Tourism Sector professionals

AIR-BRIDGE CONNECTIVITY

Twin Otter schedules to be included in the airline GDS to facilitate advance bookings. Existing schedules are recommended, not necessarily Twin Otter schedules

Twin Otter schedules to be included in LIAT and/or WINAIR networks. Existing schedules are recommended, not necessarily Twin Otter schedules

Provide a condition-based subsidy only for a limited number of scheduled flights to operate in St. Kitts and Guadeloupe's gateways during specific periods in the year, for a maximum period of two years. This will provide support for the development access through these alternative gateways. The subsidy support must be based on a strong tourism-led marketing programme – an option to be examined by Montserrat Tourism Office

Spearhead efforts for a study to be sponsored by the Organisation of Eastern Caribbean States (OECS) on passenger facilitation at regional hub airports. Initiate action for funding the recommendations to ensure long-term sustainability of quality service. An Option to be examined by Montserrat Tourism Office

Appoint a full time tourism/marketing/promotions representative in Antigua to actively canvass and work collaboratively with tour operators and carriers to meet minimum load factor targets on the airlines. Alternatively provided incentives for existing tour operators on Antigua and closely relations with experienced Tourism Sector professionals.

VISITOR FACILITATION

Agreement with Government of Antigua for departure tax exemption for day trips to Montserrat. An Option to be examined by Montserrat Tourism Office.

LIAT and/or WINAIR interline arrangements for seamless transfer at V.C. Bird International airport for flights to/from Montserrat. An Option to be examined by Montserrat Tourism Office

Collaborate with the Government of Antigua for the removal of in-transit security screening in order to enhance facilitation. An Option to be examined by Montserrat Tourism Office

Reduce the check-in processing times for both air and sea passengers

In Montserrat, introduce two lines for processing arrivals (visitors and residents). An Option to be examined by Montserrat Tourism Office

In cooperation with Government of Antigua, provide appropriate landside facilities for processing and accommodation of ferry passengers at Bryson's Quay. Under implementation

Improve on-line process of obtaining visa. On-line, visa arrangements are marketed as requiring only 24 hours, but this is not guaranteed

3.10.4 Comments on Tourism Masterplan Access Infrastructure Proposals (maritime)

Comments on the Tourism Masterplan maritime proposals are appended below. The Review proposes a different order of investment priority, as also indicated.

The Tourism Masterplan did not present any air transport investment proposals (hangars, safety equipment, etc).

PROVISION OF A BREAKWATER AT LITTLE BAY

To provide shelter for the ferry and sheltered moorings for yachts and subsequent development of a marina, a breakwater is necessary. It would extend into the sea from Rendezvous Bluff, the precise location to be determined. This is a key infrastructure component of the Montserrat Basic Connectivity Strategy.

IMPROVEMENTS TO THE JETTY AT LITTLE BAY

A number of improvements to the jetty at Little Bay are required to improve embarkation and disembarkation and also to reduce possibility of damage to the new ferry from surges. The investment in the first phase of the breakwater will protect the existing jetty. The need for short-term jetty improvement should form part of the port development plan, however no specific jetty shortcomings have been mentioned, apart from a lack of protection from storm surges.

IMPROVEMENTS TO THE JETTY (EQUIPMENT) AT PLYMOUTH

To provide for emergency landings if seas too rough at Little Bay and also to provide access by sea for tours to the proposed Plymouth Volcano Reserve, improvements to the jetty at Plymouth are necessary. Immediate purchase of fenders is required to protect vessels at berth. Limited dredging around the berth area is being contracted. Depth alongside should be monitored and further maintenance dredging undertaken in future, as appropriate.

MOORINGS FOR YACHTS AND FACILITIES

At present visiting yachts have to anchor in Little Bay (or Rendezvous Bay/Isles Bay). There are no moorings and no suitable or acceptable bathroom/shower facilities or amenities such asicedelivery, garbage removal, laundry, and boat bottom cleaning services. The Port Authority has a plan for construction of a grid buoy field for yachts outside the main port area at Little Bay, some PSD would be necessary.

Placement of moorings and construction of required on-shore facilities at Little Bay and Isles/Foxes Bays are required. Some other locations have been proposed recently and agreement reached.

MARINA AND FISHERMEN'S VILLAGE AT LITTLE BAY

With the development of the yachting product, a marina would be warranted to further develop the product, as part of a wider product concept of a fisherman's village. This would be a private sector initiative.

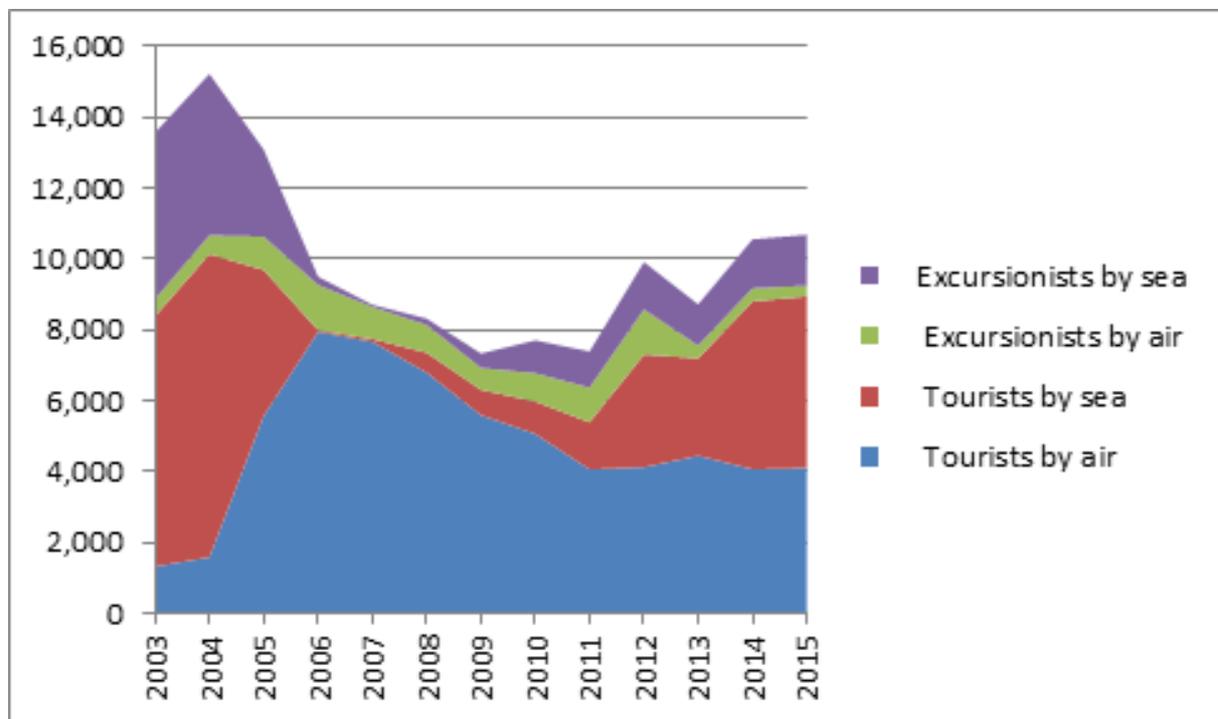
RELOCATION OF THE CARGO RELATED OFFICES AND WAREHOUSE FACILITIES TO CARR'S BAY

As part of the overall plan for Little Bay to be a Tourist Centre, the relocation of the cargo related offices to Carr’s Bay is recommended, leaving the area at Little Bay available for touristic development. This proposal does not consider the port expansion plans at Little Bay, which it should. The phased development of the breakwater will involve some cliff overhang removal work at the northern end and additional land area will become available in close proximity to the existing cargo areas to permit rationalisation of landside operations at that location.

3.11 Analysis of Tourism Data by Mode of Transport

The analysis shows how the composition of the different tourist groups, how this changes over time by mode of transport (Figure 4):

Figure 4 Composition of Tourists on Montserrat 2003- 2015 and mode of transport



The excursionist segment (daytrip visitors) was almost lost entirely when the ferry service was stopped in 2006. The tourist demand however seems to have been picked up by the air service pretty well during 2006 and 2007. Once the ferry service was re-established (in 2009) the market share of the ferry increases but the total tourist numbers did not change significantly.

The classification of excursionists and tourists is not ideal as it includes business travellers, people visiting friends and relatives as well as leisure trips.

Figure 5 presents data on overnight tourists coming for leisure (not for business or for visiting friends and relatives).

Figure 5 Overnight tourist arrivals on Montserrat 2005- 2015 by mode of transport



This analysis confirms that the drop in tourists was not as dramatic as often suggested. It is assumed that most of the area that is now blank (that is, prior 2005) should be filled by sea arrivals). So, following the cancellation of the ferry service most of the tourist demand was picked up by the air service. Following the reintroduction of the ferry in 2009 the demand was served by both modes (with price being the key factor on mode choice).

The main impact of the ferry cancellation was that it effectively killed the day tour market (for reasons of price and lack of a regular service). That market segment still hasn't recovered despite the ferry being available over recent years. In terms of overnight tourists, however, the cancellation of the ferry did not seem to have a dramatic impact (contrary to what is usually suggested).

The net conclusion is that it will be important to monitor changes of visitor numbers from now on.

4.1 Synopsis of Main Port Development

There have been several reports on Port Development at Little Bay and Carr's Bay. Thus it is somewhat uncertain as to which represents current thinking and it is consequently difficult to establish the order they should be in and so the progression in the thinking. A Review of Little Bay Master plan was critical of Halcrow's development on grounds of deficiencies in concept, for example.

There are problems as there are quite a number of needs to be met and ranges of different vessel sizes and types. Cruise ships⁸⁰ often use tenders to get passengers ashore and so catering for berthing for these appears way down the line. On the other hand, it can be expensive to develop ports incrementally. Each part may be more expensive if it has to break new ground each step. The lack of good working conditions and protection makes operations more expensive.

At some point not far down the line, putting in a breakwater that gives a more sheltered harbour allows cheaper structures to be built within it. More parts of these can be used with equal efficiency. That allows expansion in the longer term within it; the first structures can be tailored to the demand and then form part of the future, without any wastage. Providing protection also gives flexibility in the early stages to different users and provides more options.

The existence of a longer-term framework within which development can take place means that plans can build on what is there already by extension. Straight lengths of berth give flexibility allowing larger vessels but also many smaller ones; the existence of multiple berths allows higher utilisation and so reduced delays.

4.2 Preliminary thoughts on Port Planning- Locational Aspects

It seems much of the coastline along the west coast has cliffs or steep terrain with difficult or no access to the sea and the ports are located in valleys with sediment deposits from the rivers and therefore backed by relatively flat land. Natural features that create bays obviously give some shelter from certain directions and that reduces the length of breakwater needed.

On the east Coast, exposed to the Atlantic with fetch across to Africa the sea may always be rough but on the west side for a large part of the year it is calmer. The string of islands to the north of Trinidad including Montserrat around the Caribbean sea to the west have much shorter fetch on the west side and in any case the prevailing winds from the inter-tropical convergence are from the southeast and east making the west sides more sheltered. In typical hurricane situations winds are

80 In the short to medium terms only occasional Cruise ship calls, in the Medium Tourism Development, only 2 calls a month.

very strong from different directions but these are short-lived and infrequent; 1 every 2 years so not impacting on normal work.

So along the east coast of Montserrat there is no prospect for port development and on the west side there are few locations where terrain permits. There are not so many options and these have already been identified.

A strategic development can be made through providing a breakwater at a good location, which serves two purposes. Firstly, to provide a secure means of access by sea in time of emergency (should volcanic activity resume) but also serving the day-to-day purpose (not an ideal solution but an adequate one).

The north of the island is known to be safe in emergency and is used now. Of the available sites Little bay and Carr's bay are next to each other. Carr's bay is slightly more exposed but has more scope for development.

The island of Montserrat is susceptible to a high frequency of tropical storm occurrences that pass in close proximity to the island. 125 tropical storms have influenced the NW coast of Montserrat during the period 1930-2005.

A large number of these had little effect on the island with peak significant wave height of less than 2.00 m. However two major hurricanes (Luis 1995 and Hugo 1989) passed very close to the island and provide peak significant wave heights greater than 7.5 m. Both storms cause significant coastal erosions and damage to island infrastructure.

Hurricane Luis was a major storm event that produced peak significant wave height of 9.73 m at the offshore grid point. It produced large wave heights for a relatively long duration (more than 48 hrs.) when compared to other top ranked storms.

Storm waves from the NW direction produce the largest waves but large waves can still occur from the northerly and westerly directions (e.g. westerly waves can propagate directly into Little Bay).

The relatively deep-water depths just offshore of Little Bay allow large storm waves to propagate close to shore with minimal wave attenuation or energy dissipation. Not until storm waves begin to propagate over the relatively steep foreshore slope do the larger waves associated with the storm begin to break, influencing the distribution of near shore storm wave heights and design wave conditions at the proposed breakwater site.

Due to the directional consistency of the Easterly Trade Winds, Little Bay experiences winds directed from the onshore to the offshore the majority of the time (88% of the time between 56.25 - 123.75 degrees)

Although Little Bay is relatively protected from locally generated wind waves developed by the easterly trade winds, port operations are frequently hindered and often 'shut down' by the longer period swells from the north and northwest directions. Also, large waves generated by the moderately frequent tropical storms passing through the region can travel directly into Little Bay causing intense wave breaking and localised flooding. Presently, ships or smaller vessels seeking anchorage near the port or docking to the emergency pier have no protection from storm wave or the frequent swell events to which the bay is exposed⁸¹.

4.3 Preliminary thoughts on Port Planning- Breakwater Design Aspects

The orientation of the breakwater needs examination to optimise this. Its shorter term and longer term potential needs to be examined. What has been shown in some of the Port Plans is seemingly schematic and not based on any detailed degree of study. The schemes indicate combined breakwater and berths, where it may be better to separate breakwater from berths (as in option 3 of Halcrow's concept for Little Bay). The separate breakwater allows flexible development within the sheltered area created. The breakwater combined with berths might seem economical but it is not so flexible.

Port planning may work best if the breakwater is separate. It is a strategic issue to provide shelter to what is there now and to shelter what may be built in future. Located sensibly it can give protection for many of the functions that are needed, designed to do its job it can be less expensive and make use of material locally available, does not need road access and even if damaged need not damage other facilities. Material from cliffs can be used to contribute to the sacrificial beach on seaward side. In catastrophe situation Montserrat would be no worse off than it is now.

Design of a breakwater to survive sustained 9.7m Hz waves from a hurricane such as Luis in 1995 is demanding. A preliminary analysis of a horizontal composite breakwater show that a 22-meter wide caissons with an elevated wave wall is stable against sliding and overturning for the 1:50 and 1:100 year wave conditions. The caissons would be protected by pre-fabricated concrete units to absorb wave energy; prevent impulsive loads from developing along the seaward face and reduce overtopping.

For the 1:50 design conditions and an acceptable damage level for the 1:100 year storm, the required armour unit weights of the Stabits and Xbloc units on a slope of 1:1.5 were determined. Based on an allowable wave-overtopping rate for functional and structural stability the recommended elevation of the horizontal composite breakwater (protected by Stabits) is 6.75m

81 Coastal Engineering Analysis for Little Bay Port Development Project, MARTEC Ltd, Nova Scotia, Canada prepared for ADI Novaport International Consultants Ltd. January 2010.

above the mean water level, which includes a +3.0 deck elevation and a +3.75m wave wall. For a breakaway comprise of Xbloc units, the required elevation increased to +7.70 m above mean water level and included +3.0 m deck elevation and a 4.7 m high wave wall.

To reduce wave agitation in the protected basin, it is recommended that the horizontal composite breakwater be extended right up to Rendezvous Bluff rather than constructing an open trestle along this side of the port. Because the predominant direction of the seasonal and storm waves influence Little Bay from the Northwest the alignment of the breakwater can be shifted slightly seaward (+4 deg. clockwise from north) to provide additional area for the breakwater roundhead and vessel navigation through the entrance. Basin Sheltering is not comprised by this orientation change.

And a response to calamity would be to rebuild the breakwater if necessary. Providing shelter is a significant benefit not only making existing day to day operations more efficient, but in emergency circumstances e.g. of further volcanic activity gives potential capacity on a number of fronts.

Separate berths, work areas and access can be cheaper in construction if located where suitable rather than next to a breakwater. **The location of the breakwater should be an optimised trade-off between achieving shelter and cost.** Within shelter, the Port can build on the facilities that they already have and can be developed progressively to meet need. A phased approach can be more flexible. However, it also needs some medium/long term plan so that the short-term work on the Port contributes to the longer-term solution rather than becoming obsolete.

At the basic connectivity stage in the breakwater siting and extent there is need to consider the shelter that its options can achieve and the possible scale of the functions that might be required.

The Martec Study, for example, found that changing the alignment of the breakwater to the north could increase the area protected without a large change in quantity and therefore cost. Those sorts of considerations that might increase the size of the sheltered area without proportionate increase in cost should be considered.

Use of the topography and bathymetry in the siting can increase the sheltered area, which then could accommodate larger vessels. If the protected area is large enough, dedicated berth/s for cruise liners could possibly be provided within that by jetty type structures rather than by solid berths and the location and alignment of these might be possible without interfering with other existing port functions.

Following the completion of an optimised location and design process, the construction process can also be optimised. Successive caissons could for instance, be built to 5m heights onshore (at Carrs Bay) on a temporary slipway, launched, and completed to full height afloat then towed to location

and ballasted to ground them. Construction of these does not require heavy plant or facilities and could use local materials and labour.

4.4 Next Steps

In the Basic Connectivity Strategy, it is proposed that DFID engage an experienced Port Planner/Engineer in the near future to undertake a desk review of the Breakwater Design, Hydrological Studies and initial designs to prepare a sound basis for a first phase breakwater design. As part of the assignment the construction technique and materials available should be reviewed in order to come up with cost effective design and construction method. Due to the vital importance of safety of the lifeline ferries operation as well as protecting the RoRo operation year round; this preparatory step could take place independently of the planned submission of the current design for Little Port for funding consideration by the CDB.

4.5 Commentary on Measures necessary to protect the existing Berth and Jetty investment at Plymouth port

The approach channel has current depth of – 18.0 to - 21.0 m. Current depth at the southernmost area of the berth lies between - 5.8 to - 8.5 m. The maintenance dredging is to take the northernmost part of the maintenance dredging nearest to the shore to - 5.8 m.

Sensible use of Plymouth Port for marine dry bulk transport is proposed – the existing jetty and depth alongside (draught) needs to be safeguarded, after the proposed dredging in the port area to facilitate the off-loading of the heavy geothermal equipment has been completed.

One immediate action at Plymouth port will be to provide fenders to avoid damage at berth. Consideration should be provided to build temporary shelters (Portakabin type) to ensure that MPA staff can exercise control over the port facilities.

5.1 Introduction

The lifeline air route links VC Bird Airport in Antigua with the new JA Osborne Airport in Montserrat.

The basic requirements for air connectivity between the two islands are that flight operations are safe for passengers and flight costs not prohibitively expensive.

Two main information sources for this Annex were:

Aeronautical Study August 2014 Mott MacDonald GoM: and
AAIB Bulletin 2/2014 AAIB FIELD INVESTIGATIONS BN Islander

The Aeronautical Study August 2014 examined the safety at the Airport, following the introduction of a new ICAO requirement for non-instrument runways to provide RESAs (**Runway End Safety Areas**), the provision of safety recommendations by UK AAIB and reports of wind shear conditions by Pilots approaching and departing Runway 10/28.

5.2 The Aerodrome

John A Osborne Aerodrome was opened in 2005 following volcanic eruptions that covered Montserrat's previous aerodrome in pyroclastic flow. The consequences of those eruptions, and the possibility of further volcanic activity, also rendered approximately two thirds of the island uninhabitable. The island's topography meant that few possible locations for a new aerodrome remained after the eruption. The site of John A Osborne was chosen for the new aerodrome following surveys which established that the location was the only viable one, although the runway length and aerodrome size were restricted by the terrain.

The airport is located in Gerald's on the northern side of Montserrat at an elevation of 168m above sea level. It is surrounded by high terrain to the north and south, with deep valleys to the east and west. There is a steep drop of approximately 60m at each end of the runway. RWY 10 and RWY 28 have overshoot RESAs but no undershoot RESAs.

The predominant wind (a very consistent wind direction) is from the East. As it is noted that the majority of crosswinds experienced are partial cross winds rather than 90 deg. crosswinds, it can be concluded that the current alignment is the optimal alignment and an appropriate alignment for operations at MNI.

The aerodrome has a small terminal building, air traffic control tower, and fire station.

The aerodrome's regular traffic is Islander aircraft operating to and from other Caribbean islands, notably Antigua, which is Montserrat's nearest neighbour. The largest aircraft accommodated is the de Havilland Twin Otter. The aerodrome also supports helicopter operations.

Runway dimensions and surroundings

The aerodrome's only runway, Runway 10/28, is 596 m long, and has a 28 m displaced threshold at each end. It satisfied the criteria for an ICAO Code 1 runway, which was not required to have Runway End Safety Areas (RESA's).

Code 1 runways are required to have surrounding runways strips extending 30 m from the runway centreline. A runway strip is provided: 'to reduce the risk of damage to aircraft running off a runway; and to protect aircraft flying over it during take-off or landing operations.'

The aerodrome has a runway strip, which complied with the regulations, though in places embankments had been constructed that might pose a hazard to an aircraft following a runway excursion. The terrain falls away steeply beyond the ends of the strip. The ends of the runway are shown in Figure 1 and Figure 2.

Figure 1 The western end of the runway viewed from below

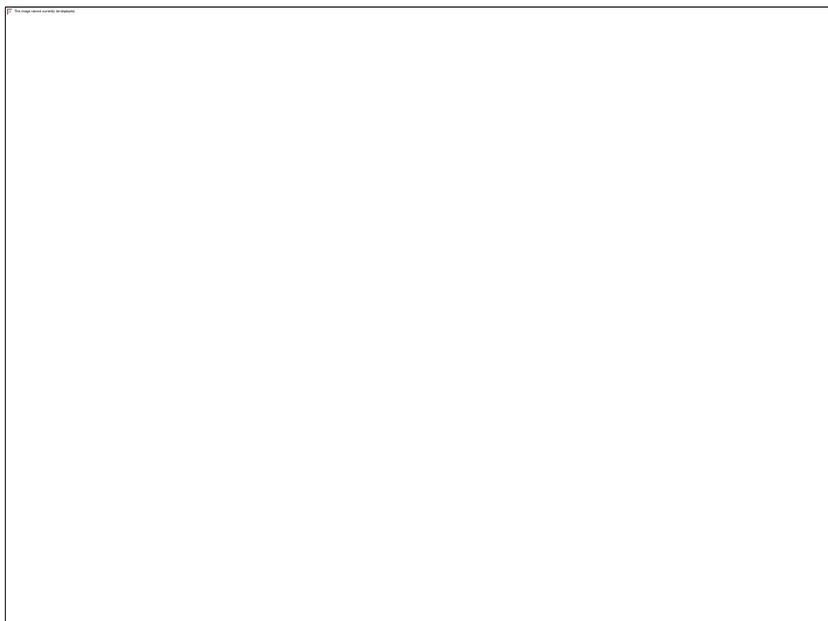
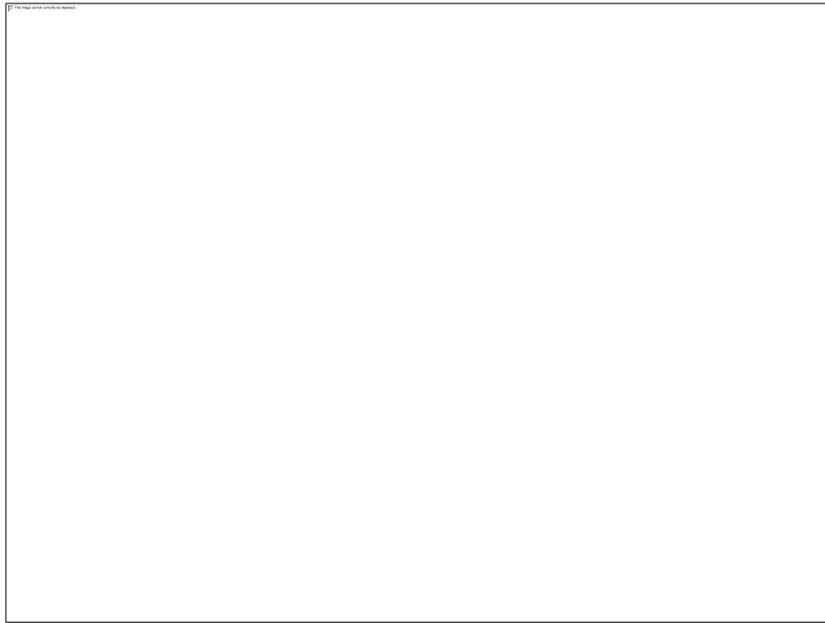


Figure 2 The eastern end of the runway



5.3 Key Findings of the Aeronautical Study

The key findings were:

Due to the topography surrounding MNI, aircraft approaching and taking off from the airport are subjected to wind shear, turbulence and 'ground effect'.

Operationally, based on the results of the wind analysis, flying the downwind overhead pattern before turning and aligning with the glide path for touchdown on RWT 10 would be favourable, because of the wake generated by the nearby ridge.

A number of penetrations to the Conical Surface, Inner Horizontal Surface Transitional Surface and Take-off Climb Surface were found for MNI. Only one penetration was identified for the Approach Surface. Recommendation includes the marking/ lighting of some of the obstacles that penetrate or are close to the OLS. (Obstacle Limitation Surfaces).

The existing runway AGL lights are adequately functional for the current runway operations at MNI. One of the proposed mitigation measures from the risk assessment is to increase the angle of APAPI from 3.5 deg. to 5.5 deg. Simple touch down lights need to be provided in MNI. Additional runway markings need to be provided.

24 non-compliances were identified at MNI of which the majority are related to OLS, airport surface markings and lighting. These non-compliances could be rectified simply by provision of the required infrastructure.

The one outstanding non- compliance relates to the provision of an URESA (Undershoot RESA).

A risk assessment was carried out to analyse the risk associated with take-off and landing at MNI to review the requirement for an URESA. A total of 38 mitigations have been proposed to address the causes and consequences of a runway undershoot and excursion.

If night-time operations are to be considered then some definition of these penetrations is essential. Where appropriate it is beneficial to locate an obstacle light on an existing structure. If there is no available structure in the immediate vicinity of the proposed location of the obstacle light then it should be mounted on a 2m structure to ensure its visibility from the air and the aerodrome.

8 obstacles to the north of MNI

11 obstacles to the south of the MNI

2 obstacles to the East of MNI

Obstacles adjacent to the airfield: proposed lighting of floodlights and NDB at night

5.4 Implications for the BCS

The safety of aircraft operations on the lifeline air bridge route between Montserrat and Antigua is paramount, not only for its citizens but it is one of the main means of tourism access to Montserrat and tourism could suffer if there were any significant incidents.

One of the proposed mitigation measures from the risk assessment is to increase the angle of APAPI from 3.5 deg. to 5.5 deg. Simple touch down lights need to be provided in NMI. Additional runway markings need to be provided.

5.5 Implications for the ECS

In the ECE, as traffic builds, some extension of the operational hours of the Airport may wish to be considered. For night-time operations the following investments would be required to ensure compliance with the provision of an URESA (Undershoot RESA).

Definition of penetrations is essential placing an obstacle light on an existing structure or to mount lights on a 2m structure at the obstacle to ensure its visibility from the air and the aerodrome.

GOVERNMENT OF MONTSERRAT

PREMIERS OFFICE

Montserrat Access (Connectivity) Coordinator

draft TERMS OF REFERENCE FOR AN ACCESS (Connectivity) COORDINATOR FOR THE GOVERNMENT OF MONTSERRAT

1. Background: Overview of Air and Ferry Access since 1997

1.1. Montserrat is a British Overseas Territory, located in the Leeward Islands of the Caribbean Sea. The island's population is now around 5,000 (2014) but was 12,000 prior to a series of volcanic eruptions in the mid-90s that devastated Montserrat's infrastructure, rendering two-thirds of the island uninhabitable and resulting in heavy population, capital and skills outflow. With a stagnant economy based on consumption and dominated by the public sector, Montserrat is dependent on UK aid.

1.2 As for any island, adequate access is critical for Montserrat: Tourism is Montserrat's most promising export and it is difficult to further develop the tourism product without efficient access links. Montserrat's local private sector needs cost-effective access to the regional market to source inputs and build a larger customer base. Montserratians (in particular poor and vulnerable individuals) rely on affordable access to goods and services that might not be available on island, in particular specialised health care and education. This also includes emergency evacuation (a UK contingent liability).

1.3 Sea and airport infrastructure in south of the island was destroyed by the volcanic eruption. In 1997 a new open seaport with a temporary berthing infrastructure was constructed in Little Bay (82 by 10.4 meter single finger jetty, landside superstructure and cargo facilities). Over the years various arrangements have been in place to provide a ferry service between Montserrat and Antigua. Most recently the Caribe Sun ran on a 5 day a week schedule. This contract ended in April 2016 and the contracting process for a new contract was concluded. In 2005 a new airport was opened at Gerald's' in Northern Montserrat with a 600 metre long runway that accommodates aircrafts with short take-off and landing capability. Currently two airlines are serving the air transport market, Fly Montserrat and SVG/ABM. Both sea and air services are serving the residential and tourism market. While demand is highly seasonal (with higher demand in winter months) overall the market is small.

1.4 Effective coordination and management of the different stakeholders within GoM (e.g. customs, immigration, etc) and outside GoM (e.g. ferry operator, airlines, brokers, etc) is crucial for ensuring

good access links to and from Montserrat. Key operational issues are contract and performance management, management information (i.e. collecting and managing data), and coordination between service providers as well as within GoM and balancing of sea and air access. The access coordinator would lead on these issues.

2. The Proposal

2.1. The GoM intends to appoint an Access Coordinator to take responsibility for managing and coordinating air and ferry access to Montserrat. The Access Coordinator will have relevant sea and ferry access transport management experience. The Access Coordinator will work in an environment, which engages full-time with travellers to and from Montserrat, with traders in the private sector and with high level Government Staff. The Access Coordinator will report to the Permanent Secretary in the Premier's Office, the ministry with responsibility for access.

2.2. The work of the Access Coordinator is guided by GoM's Access Strategy. The Access Coordinator is charged with managing and coordinating all operational access tasks related to the implementation of the Basic Connectivity Strategy for Ferry and Air Passengers. The key responsibilities are to enable effective, efficient and competitive air and sea access to Montserrat, and to promote a cooperative and productive relationship between service providers, GoM and other stakeholders e.g. tourism industry.

2.3 GoM is currently further developing its capacity in developing and promoting Montserrat's tourism product. Once that process is completed, it is expected that the Access Coordinator will engage closely with the tourism division to ensure that potential for synergies between access and tourism is being exploited.

3. Purpose

3.1. The principal job purpose of the Access Coordinator is to manage and coordinate air and ferry access to Montserrat effectively and efficiently, within policies and guidelines agreed by the GoM and subject to GoM's undertakings with DFID for cost-effective implementation of these terms of reference.

4. Objectives

4.1 To coordinate effectively and efficiently on ferry and air transport access modes with government departments and agencies, Antiguan authorities and service providers.

4.2 The lead on regular coordination is expected to be a key part of the access coordinator role going forward. One of the key responsibilities of the Access Coordinator will be to draw up, implement and

monitor annual tactical plans to address connectivity coordination for ferry and air transport modes (see below).

5. Scope

5.1. Support GoM press officer in communicating air and sea access information to Montserratians, visitors and merchants, coordinating with the Air Access Committee and other bodies (e.g. MTB, MPA, John Osborne Airport). Communicate with and maintain contact with inter-island transport developments (on Antigua and Montserrat).

5.2. The Access Coordinator will produce, implement and monitor an annual tactical access/connectivity plan for ferry and air transport modes. The annual access/connectivity plans will be in compliance with the overall guidance from the higher-level revised Access Strategy. The annual tactical plan will be developed by the Access Coordinator as a tool for discharging his/her responsibilities for access coordination over the year ahead. It will serve as a baseline against which his/her performance could be measured by GoM and others. It should include the scope of works, the timelines for discharging his/her responsibilities; it will identify key actors and participants in the coordination process and will identify key (work) performance indicators.

5.3. He/she must closely coordinate activities with the division in GoM, which has the overall responsibility for developing Montserrat's tourism market. The Customs and Immigration Department plays a key role in handling and processing arriving and departing passengers at the ferry terminal and the airport. The Access Coordinator will assist to manage and drive any necessary changes implemented by Customs and Immigration and will report on any such operational matters in his/her regular progress reports.

5.4. Provide operational support to a partnership steering group, to include the service providers, meeting *monthly* to assess and discuss performance against the service contracts and to assist in proposing pre-emptive action, where necessary. The Coordinator should play a lead management role in the monthly steering group meetings, anticipating problems and ensuring that solutions are put in place to ensure that access/ connectivity continues to run smoothly and that visitors and trade are not disrupted. He will assist to draw up a list of issues arising from the monthly meetings and to agree a timebound course of action with stakeholders and users to meet challenges and to solve problems.

5.5. Assist to develop the key air and ferry services, assessing the introduction of any new features and measures to enhance operational performance. Attend a service development work group, to include users, meeting *quarterly* to consider enhancements to the service. The Coordinator should summarise agreements and necessary actions by the stakeholders arising in the quarterly meetings and then implement these, together with service providers and the procurement team, as required.

5.6. Meet with service providers and other partners on an ad hoc basis, when the need arises e.g. after an unforeseen event causing potential safety or operational issues. The Coordinator should draw up a list of emergency issues, agree a timebound course of action together with stakeholders and users, and then implement it to achieve a swift solution of the specific ad hoc issue.

5.7. Work with accountant to monitor the SLA through statistical and qualitative data provided by the service provider and other partners. Lead on collecting data periodically through user surveys, as necessary.

5.8. Work in close collaboration with service providers to anticipate and resolve or mitigate problems before their consequences can be felt. Help draw up a pragmatic dispute resolution arrangement, including access to a neutral arbitrator, with assistance from/under the general direction of the procurement team.

5.9. Review the partnership annually with the partners and make written proposals for improvements, where appropriate.

6. Deliverables

6.1. The Access Coordinator will produce the following outputs in conjunction with Government Advisors:

Annual access tactical plan for ferry and air transport services, at the start of each period

Monthly and quarterly meetings, with minutes

Monthly access monitoring reports

Quarterly access development reports

Annual Access Coordinator report

7. Terms

7.1. GoM will employ the Access Coordinator for a xx year period from xx to yyy. *(For internal use: The post will be funded by DFID through the DFID/GoM Financial Aid Agreement. The post-holder will be recruited through external competition – a DFID representative will participate in the election process).*

8. Reporting

8.1. The Access Coordinator will report to the Permanent Secretary in the Premier's Office, the ministry with responsibility for access.

8.2. The PS Premier Office will be the project manager for GoM, and will be responsible for producing an annual report on the performance of the Access Coordinator for the Montserrat Programme Manager, DFID. The Access Coordinator will provide monthly progress reports to the PS PO, which will be shared with DFID.

8.3. The project manager for DFID will be the Montserrat Deputy Programme Manager. The lead adviser will be the Private Sector Development Adviser, OTD.

9. Competences

9.1. The Access Coordinator should have the following skills, knowledge and qualities:

Essential

A qualification in economics, transport, management or business

Management or operational experience in the transport industry (min 5 years)

Technical knowledge of sea and/or air transport modes

Excellent communication skills (written and oral)

Excellent interpersonal and team working skills at a high level in Montserrat and Antigua.

Desirable

Experience of coordinating transport modes in government

Experience of small island transport, preferably Caribbean

GoM/DFID

July 2016

Annex 7 Montserrat Visit Programme Access Expert: David Shelley

24 May to 3 June 2016

Date/Time	Meeting with	Objectives meeting	Attendees	Location
Tues May 24				
David Shelley arrives on Montserrat (Some admin. in Montserrat Driving Licence, etc.)				
Wed May 25				
8.00 – 9.00	Montserrat Team	Introductions Discuss purpose of visit	Moira Marshall Allan Clarkin Alice Clarke	DFID
9.00 – 9.30				
10.00 – 14.00	Tender Evaluation Team	To discuss evaluation of access tenders		Cabinet Secretariat Conference Room?
14.00 – 14.30		LUNCH		
14.30 – 15.00		Continuation of Desk Review		
15.00 – 16.00		Continuation of Desk Review		
Thurs May 26				
8.00 – 9.00	PS Office of the Premier Camille Gerald	Introductions Briefing on purpose of visit Discuss the long term vision for access on Montserrat Review the challenges to ferry advertising process, ferry booking systems, free and reduced fares Discuss previous subsidy arrangements for sea access Discuss subsidy arrangements for air access	Hannes Bahrenburg	Office of the Premier
9.00 – 9.30	Hon. Premier Donaldson Romeo	Introductions Briefing on purpose of visit	Hannes Bahrenburg	Office of the Premier

Date/Time	Meeting with	Objectives meeting	Attendees	Location
10.00 – 11.30	Head of Procurement Gareth Spencer	Introductions Discuss procurement regulations and limitations Discuss issues facing procurement of suitable access services for Montserrat?	Hannes Bahrenburg	MoFEM
12.00 – 13.00		LUNCH		
13.00 – 14.30	Airport Manager Denzil Jones	Introductions Discuss airport operations and capacity (passengers, freight, etc) Discuss limitations and/or challenges to air access on Montserrat Tour of the airport	Steve Ryan Hannes Bahrenburg	John A Osborne Airport
15.00 – 16.00	HE Governor Elizabeth Carriere	Introductions Briefing on purpose of visit	Hannes Bahrenburg	Governor's Office
Fri May 27				
8.00 – 9.00	DFID Infrastructure Adviser John Bowker	Introductions	Hannes Bahrenburg	DFID
9.00 – 10.00				
10.00 – 11.00	Access Coordinator David Duberry	Discuss access strategy Review recent challenges to access Discuss Montserrat's access limitations	Hannes Bahrenburg	E. Karney Osborne Building
11.30 -				
12.00 – 13.00		LUNCH		
13.00 – 16.00	DFID Infrastructure Adviser John Bowker	Continuation of Discussion on Infrastructure		
Sat May 28				

Date/Time	Meeting with	Objectives meeting	Attendees	Location
09.00 – 15.00	Site Visit All areas of Montserrat Jack Boy Hill, Belham River area, Little Bay		Hannes Bahrenburg	Montserrat tour of main network
Mon May 30				
8.30 – 9.30	Manager of Montserrat Port Authority Joseph O'garro	Introductions Discuss port requirements for sea access (incl. arrival and departure procedures) Assess condition of Little Bay port infrastructure, facilities for ferry passengers, and facilities for freight operations	Hannes Bahrenburg	Montserrat Port Authority
9.30 – 10.00	Site Visit	Ferry Terminal Port facilities	David Duberry	Little Bay
10.00 – 11.00				
11.00 – 12.00	DFID Representative Martin Dawson	Introductions Discuss history of DFID support to sea and air access (constraints and challenges) Discuss DFID's support of long term vision for access	John Bowker Hannes Bahrenburg	DFID
12.00 – 13.00		LUNCH		
13.30 – 14.30	PSR Programme Manager Felicia Linch	Introductions Discuss institutional constraints within GoM	Hannes Bahrenburg	Governor's Office Conference Room
15.00 – 17.00	Manager of Montserrat Airways Nigel Harris	Introductions Discuss challenges to operating an airline on Montserrat? Discuss air transport access links – other regional O/D's besides Antigua		Governor's Office
Tues May 31				
8.30 – 9.30	Director of Disaster Management Coordination Agency (DMCA)	Introductions	Hannes Bahrenburg David Duberry?	Olveston House

Date/Time	Meeting with	Objectives meeting	Attendees	Location
	Billy Darroux	Discuss national disaster management plans in terms of access Discuss condition of Plymouth port facilities (depth, damages to infrastructure, access channels, etc.)	Tony Bates Rod Stewart	
9.30 – 10.00	Site Visit	Plymouth Jetty	Hannes Bahrenburg David Duberry?	
11.00 – 12.00				
12.00 – 13.00		LUNCH		
13.30 – 15.00	Site Visit	Tourist attractions sites		Sites including National Trust
15.00 – 16.00				Salem
Wed Jun 1				
8.00 – 9.00	HE Governor Elizabeth Carriere	Visit Debrief	Hannes Bahrenburg Martin Dawson? Tony Bates?	Governor's Office
9.00 – 10.00				
10.30 – 12.00	Head of Montserrat Customs & Revenue Service Peter White	Introductions Discuss customs and immigration entry requirements at sea and air ports Discuss import/export duty charges	Violette Silcott Amelda Winspeare Derrick Lee Hannes Bahrenburg	Governor's Office Conference Room
12.00 – 13.00		LUNCH		
13.00 – 14.00	Director MVO Rod Stewart	Volcanic History, Road Access, Port Access, Tourism Development		MVO
14.30 -				
16.30 – 17.30				
Thurs Jun 2				
8.30 – 9.30	Ferry Operator Roosevelt Jemmotte	Introductions Discuss operation of previous ferry		Governor's Office

Date/Time	Meeting with	Objectives meeting	Attendees	Location
		Discuss challenges to operation		
9.30 – 10.00	Taxi & Tours Association	Introductions Discuss the role of access on business	Eustace Dyer Roosevelt Jemmotte	Governor's Office
10.00 – 11.00	MCW&L	Introductions Previous survey data for the Plymouth jetty	Junior Bruce Rawlson Patterson Rolando	MCWL Conference Room
11.30 – 12.30				
12.30 – 13.30		LUNCH		
13.00 – 14.00	Montserrat Team	Wash up discussion- Discussion of Basic Connectivity Strategy- written comments received from Hannes Bahrenburg	Martin Dawson John Bowker Hannes Bahrenburg	DFID
15.00 – 16.00				
Fri Jun 3				
9.00 – 10.00	Independent Tour Operator 268-720-9633	Ferry Operations, scope for increased market development	Dave Dore	Ferry Terminal
	Jenny Tours Representative 268-782-5430	Ferry Operations, scope for increased market development	Jenny Burke Veronica Burke	Ferry Terminal
10.00 – 11.00				
11.30 – 14.0	SVG Representative 268-746-8809	Development of regional aviation services, characteristics of local aviation services Montserrat Antigua	Jackie Williams	VC Bird Airport (old terminal)
14.00 – 16.30	Tourist Office, Antigua & Barbuda	Obtain Publications and Details of Antiguan tourist market		Site Visit Antigua, VC Bird New Airport
	David Shelley demobilises Antigua 7pm			

Annex 8 Comparison with Islands of St. Mary, Scilly Isles, Islay, Inner Hebrides and Inishmore, Aran Islands, Ireland

Some additional more detailed comparisons of small island connectivity have been undertaken, subsequent to the analysis presented in Annex 2 (which included six Caribbean islands of varying population levels). Although there are not many islands within close proximity to the mainland (or another island hub) having similar conditions as Montserrat (low population, high dependence on tourism, mountainous terrain, rough sea crossings, etc.) a comparison has been possible with comparative connectivity conditions on St Marys, Scilly Isles, Inishmore, Aran Islands and Islay, Inner Hebrides in Scotland. None of these islands provides a perfect comparison. Further information is provided in tables 8.1-8.6 below.

For aviation, St. Mary's, Scilly Islands and Inishmore, Aran Islands and Islay, Scotland each have similar airport and air-crossing environments, with St. Mary's Scilly being a rather appropriate comparison, as it is currently served by both BNI and Twin Otter air services. At St. Mary's and Inishmore proposals have been made recently both to remove helicopters. (At St. Mary's, Scilly Isles, where a service by BIH that had 40% of the air crossing market was withdrawn after many years of operation, due partly to the age of the helicopter fleet) and at Inishmore, Aran Islands to introduce lifeline air crossing services by (Sikorsky type pax.) helicopter services instead of fixed wing services. The proposal for a new helicopter service between Galway and Inishmore has not yet been accepted. The Sikorsky S 61 N has a capacity of 23 passengers and is less dependent on weather crossing conditions than a fixed wing aircraft. The helicopter service at St. Mary's was passengers preferred means of air transport connectivity.

A direct comparison can be made between the BNI services at Inishmore and the BNI services at Montserrat, as both are subsidised, whereas the St. Mary's BNI services are not. The route fare in pds/nm provides a comparison. At Montserrat and Inishmore, BNI fares range between 4.0-6.0 pds per nm in a subsidised environment. In the unsubsidised environment at St. Marys, Scilly and Islay, Hebrides, air-crossing fares per nm are higher, ranging between 9.0-12.0 pds/nm. For ferry transport, St. Mary's, Scilly Islands has a comparable rough winter sea crossing but is served by an older style large capacity shallow draft vessel (with stabilizers) now operating only during the summer months when tourist numbers are high, mainly due to depth constraints at Penzance and St. Mary's harbour, which are also currently being remedied. A year round lifeline cargo operation is also provided between St. Mary's and Penzance using a conventional coaster vessel. Proposals have been made to replace the lifeline passenger ferry and the lifeline cargo vessels by a more modern RoPax type of vessel, similar to that operating from Islay. It is understood that a subsidy has been sought for vessel purchase (not yet approved). The very modern and high capacity combined RoPax ferry in operation between Islay and the Mainland was provided using Government funds. The ferry crossing between Kiltonan harbour on Inishmore and Rossaveal Connemara is shorter and (now) served by slower summer ferries only (the previous high capacity/ high speed ferries having been sold to Mauritius)

A direct comparison can be made between the ferry services at Inishmore and the BNI services at Montserrat, as both are subsidised: whereas the St. Mary's BNI services are not. The route fare in

pds/nm provides a comparison. At Montserrat and Inishmore, ferry fares range between 2.0 - 2.50 pds per nm in a subsidised environment. In the unsubsidised environment at St. Marys, Scilly, sea crossing fares per nm are much higher, about 7.50 pds/nm, however utilising a summer service only high capacity (but low speed) ferry. No comparison is possible with sea ferry fares on Islay; the modern RoPax service there carries many cars and trucks, as well as passengers.

Table 8.1

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Table 8.2

2	Parameter	Air Transport	Ferry Transport	Cargo Transport	
Aran Islands					
Inis Mór: situated on the west coast of Galway, it is about eight miles out in the Atlantic Ocean	Summer Population/Inis Mór		2560		
	Winter Population/Inis Mór		1280		
	Port to Port Distance, km	17	24	26	
	Port to Port Time	10-15 mins	40 mins.	90 mins	
	From	Inishmore/Kilronan	Inishmore/Kilronan	Inishmore/Kilronan	
	To	Inverin, Connemara	Rossaveal	Galway	
	Operator	Aer Arann	Island Ferries Ltd. (Doolin Ferries also operate Summer Services from Co. Clare.)	O'Brien Shipping	
	Av. Travel Speed (knots)	70		15	
	Length of Runway	520	na	na	
	Aircraft Type/Vessel Name	BNI	MV Music of the Seas, 294 Pax	Previously MV Oilean Arann	
	Ferry Type	na	Pax Ferry	Mix Pax and Cargo with 26 tonne crane	
	GRT		234	not known	
	Vessel Name	na	MV Magic of the Seas, 294 Pax		
	GRT		234		
	Ferry Type	na	Wavemaster Monohull		
	Draught	na	2-3m	2m	
	Air/Sea route conditions	Aer Arann rarely loses flights for full day due to bad weather - most - 5 days a	although short crossing, seas can be rough during winter		
	Air and Marine Terminal conditions	VFR airport	harbour at Kilronan: An existing Pier was to be refurbished and extended, dredging of rock to form Harbour Basin and associated Navigation Channel.		
	Air market	The Aer Arann service to the Aran Islands is generally used by Islanders for emergencies, for specific appointments and by old age pensioners	na	na	
	Pax. Volume (a. Date: 2001)	35250	113316	11796	
	Adult Fare (Cost/return (euros))	49	The return adult fare is €25.00. Children pay €13.00.	na	
	Adult Fare (Cost/nm (euros))	5.76	2.08	na	
	Aircraft type(s)	BNI	na	na	
	Passenger capacity	9	294	240 Pax and freight	
	Av. Load Factor	98%	47%	'carrying capacity of the vessel is very seldom fully utilised'	
	Operating period	all year round	Summer Services	all year round	
	Marine Cargo Volume (pa)	na		7171	
From	Inis Mór, Minna Airport, Inverin	Rossaveal	Galway		
To	Connemara	Inis Mór	Inis Mór		
Annual Subsidy 2009-2013	€745,000.00	844026	na		
Subsidy/Pax (euros)	€71.13	€7.45	na		
Subsidy/Per capita (euros)	€291.02	€29.70	na		
Frequency	three daily return flights to Inis Mór and two daily return flights to Inis Meán and Inis Iorain weekdays, with four return flights on weekends	returns daily (winter); up to 9 returns daily (summer)	year round		
Summary: the heavily subsidised lifeline air operation since the 70's with Aer Arann using BNI aircraft is currently being re-tendered. The status of an alternative air lifeline proposal: a helicopter service from Inishmore to Galway is unclear. In the past the Aran Islands have been served by subsidised year-round ferry and freight cargo services. The harbour at Kilronan has been improved under the 50 million harbour extension in Inis Mór to provide a safer environment (new breakwater) as well as greater depth. The future of the lifeline ferries are in doubt after legal proceedings over passenger charges imposed on the island and harbour charges at Rossaveal harbour. The previous subsidised year-round fast ferries (Class B vessels) have been sold to Mauritius and the current smaller capacity ferries operate as summer services only during calmer seas. The status of the previous lifeline sea cargo operation is unknown.					



Table 8.3

3	Parameter	Air Transport	Ferry Transport	Sea Cargo Transport
Scilly Islands				
St. Mary's	Population	2000		
	Port to Port Distance, km	30	24	24
	Port to Port Time	15 Lands End to 30 mins Newquay	2 hrs 00 mins	average time for a single journey is approximately 2 hours 30 minutes in good conditions
	Operations and Vessels	Fixed wing flights operate from the mainland UK airports at Land's End, Newquay, Exeter, Bristol and Southampton to St. Mary's airport. Over half the flights are between Lands End and St. Mary's	The Scillonian is a part of the emergency response and civil contingency for incidents occurring on the Isles of Scilly.	Gry Maritha
	Ferry type	na	Single hulled coaster type	na
	Pax Capacity	see below	485 pax plus 30 tonnes freight	very basic passenger accommodation for up to 20 people including the crew.
	Draught (m)	na	2.9	3.4
	Length (m)	na	68	42.3
	Pax Volume (pax) (2010)	56529	79148	na
	Freight Volume (tonnes) (2008)	na	supplementary freight in summer period	15700
	Av. travel speed (knots/hr.)	90 knots	16.3	9
	GRT	na	1255.55	590
	From	St. Mary's	St. Mary's	St. Mary's
	To	Lands End (NI) / Newquay (twin Otter)	Penzance	Penzance
	Length of Runway (St. Mary's and Land's End)	2600m	na	na
	Journey time (St. Mary's to Land's End (NI)	15 mins		
	Length of Runway (Newquay)	more than 2000m		
	Journey time (St. Mary's to Newquay) (OT)	30 mins		
	Journey distance (km)	70		
	Aircraft type(s)	(NI) B7370	na	na
	Depth of water at berth	na	being upgraded - in the past a constraint to low tide	
	Air/Sea Route Conditions	Windier route to traverse to St. Mary's from the Mainland	Vessel has a tendency to roll in moderate seas, which can lead to an uncomfortable journey. This is especially so in the passage from Penzance to the Isles of Scilly as it is cross exposed and open sea real and experiences a wide variety of weather conditions; the Gulf Stream splits the Land's End to either side of the South West peninsula, meaning also that the vessel goes against the currents on the way to Scilly and with them on the way back. As a result the flat-bottomed vessel is subjected to severe motion, which combined with the increased prevalence of sea sickness on journeys of over 2 hours, can make for an unpleasant and uncomfortable experience.	Vessel is capable of all weather transport. Passage from Penzance to the Isles of Scilly is cross exposed and open sea real and experiences a wide variety of weather conditions; the Gulf Stream splits the Land's End to either side of the South West peninsula passage from Penzance to the Isles of Scilly is cross exposed and open sea real and experiences a wide variety of weather conditions; the Gulf Stream splits the Land's End to either side of the South West peninsula
	Air and Marine Terminal conditions	affected by fog and high winds and by water-logging on the grass runway at Lands End airport.	Cramped and shallow port facilities at St. Mary's and Penzance harbours (some improvement works underway). Offloading directly to the Lyonesse Lady without handling onto the quayside at St. Mary's	Cramped and shallow port facilities at St. Mary's and Penzance harbours (some improvement works underway)
	Year of build	na	1977	1981, is a Norwegian coaster vessel
	Fare cost (Adult fare period return) (2012)	pds 120-160 (NI) Penzance, 80 pds 210	85 (95)	na
Adult Fare cost/nm/pds (NI) Vessel	9.3	7.50	na	
Adult Fare cost/nm/pds (win) Otter	6.0	na	na	
Aircraft Capacity	8 pax, 17 pax	na	na	
Op Cost/nm/pds	2.5	1.28	na	
Load factor	reportedly high	high in summer peak period	na	
Operating period	there are only a few occasions during the year when the winds prevent flying	end in March to end of October	Year round	
Annual subsidy (pds)		None		
Subsidy/pax	None	Replacement of the islands existing freight and passenger vessel with a single dual-purpose vessel is proposed. This is to provide a greater level of connectivity to the mainland whilst reducing the carbon outputs associated with the tourism industry. A grant application has been prepared for the planned ferret service vessel replacement		
Subsidy/ per capita	None	None	None	
St. Mary's Land's End	up to 20 flights a day	na	na	
St. Mary's Newquay	5 flights a day	na	na	
Frequency	Flights operate 5 days a week, several airlines	In service for passengers and cargo 6 months of the year (March/April to September/October). The ferry normally sails 3 days a week from Monday to Saturday	operates year round and works 6 days a week (rotation, departing from St. Mary's on Tuesday, Thursday and Saturday	
<p>Summary: Unsubsidised air and ferry routes from St. Mary's to Land's End, Penzance and Newquay. Aircraft type: (NI) (Land's End) and (win) Otter (Newquay). Lifeline helicopter passenger service between St. Mary's and Land's End withdrawn recently after 30 years in operation. Large summer ferry (Scillonian) in operation heading replacement at the end of its service life. An application for vessel purchase subsidy has been made. The harbours at Penzance and St. Mary's and Penzance have been improved (deepened) with Govt. support. The Scillonian is a low draught flat-bottomed vessel purpose built for the shallower harbours and rolls considerably in heavy seas. A replacement ferry vessel could now be constructed with greater depth thereby providing better crossing comfort.</p>				



Table 8.4

4	Parameter	Air Transport	RoPax Ferry Transport	RoPax Ferry Transport
Inner Hebrides				
Islay	Population	3228		
	Route	Islay to Glasgow		
	From	Islay to Glenegedale Airport	Port Askaig	Port Askaig
	To	Glasgow Int. Airport	Kennacraig	Kennacraig
	Port to Port Distance, km	72	24	24
	Length of Runway, Islay m	1545	na	na
	Length of Runway, Colonsay m	500		
	Aircraft type	Saab 340	na	na
	Aircraft Capacity	34 pax	na	na
	Av. Journey Time Islay to Glasgow	40 mins.	1 hr. 15 mins to 2 hrs 15 mins.	
	Av. Journey Speed knots/hr.	110	12	
	Pax. Volume (pa 2010)	29000	169280	
	Depth of water at berth	na	the new inner harbour has a designed depth of at least 2 metres at MLWS.	
	Air/Sea route conditions	check airstrip Islay airstrip Colonsay	West Loch Tarbert, Argyll is a long and narrow sea loch on the western side of the Kintyre peninsula in Scotland. Kennacraig Ferry terminal is located 5 km south of the fishing village of Tarbert on the Kintyre Peninsula.	
	Air and marine terminal conditions	check	Port Askaig is generally sheltered from all westerly winds. It has a maximum spring tide range of approx. 2 m.	
	Operator	Loganair via Flybe Saab 340		
	Adult Fare Cost Return pds	98	with vehicle fare	
	Av. Adult Return Fare Cost / (nm Pds (jet))	2.72	na	na
	Operator (BNI) aircraft	Hebridean Air BNI Hebridean Air Services operate on Tuesday and Thursday day return service from Oban and Colonsay to Islay. This is a new service running since June 2010. The aircraft departs Oban at 0805, routing through Colonsay to Islay. This gives Colonsay residents the opportunity of flying to Islay to connect with the Flybe service to Glasgow. Islay residents also have the availability of day return service to Oban departing Islay at 0930 and departing Oban for Islay at 15-10.	na	na
	Route Colonsay - Islay	28		na
	Journey Time mins	20		na
	Fare Cost Return pds	170	na	na
	Av. Adult Return Fare Cost / (nm Pds, BNI)	12.14	Not comparable as these are car ferries so fares relate to the vehicle type as well as the number of passengers	
	Name of Vessel		MV Inlaggan - Fionnlagan	MV Hebridean Isles - Ileannan Innsle Gall
	Vessel Operator	na	CalMac Ferries	CalMac Ferries
Ferry type		High Capacity RoPax vessel	High Capacity RoPax vessel	
Built	na	2011	1985	
Capacity	na	500 pax 5 cars 3 trucks	62 cars and 94 passengers	
Speed knots/hr.	na	16.3	15.0	
GRT	na	5209	3046	
Cost / (nm (pds)	0.68	0.25		
Operating period	Tuesday's and Thursday's only	year round	year round	
Frequency	2 returns per weekday, 1 return per day weekends	twice a week		
Subsidy Approach	The Scottish Air Discount Scheme (ADS) is managed by Transport Scotland. It provides discounted fares on eligible routes to people whose main residence is Islay. The scheme was recently extended to include Colonsay residents in the light of the new non-PSO service between Colonsay and Islay.	CalMac is a state-owned ferry operator. The MV Inlaggan was contracted by CMAL in November 2007 and was the first new ship to serve the Islay route in almost 40 years. Western Ferries claim that they were forced to exit the route by questionable tactics by CalMac who were given public money to purchase new ro-ro ferry, the MV Pioneer, onto the Islay route in 1975. In summary, the history of the vessel purchase by a state-owned entity.		
Subsidy pds/pa	discounts for people living on island	possibly up to pds 8.6 million for various welfare components for Western Isles (20,000 pop)		
Subsidy / pax		17%	8642500	
<p>Summary: Islay served by large RoPax ferry operation with new technology high capacity vessel. Islay connected with lifeline air route to Glasgow (regional jet operation) with BNI services to nearby Colonsay. Special ADS discount scheme for islanders on air services to Glasgow. Lifeline mixed Ferry/Freight Vessel is operated by state which provided financing.</p>				

Table 8.5

Adult Airfare Comparisons per nm: Return Trip					
	Aircraft	Currency	Airfare per nm	Operations	Subsidy Conditions
Montserrat, DT	BNI	pds	6.20	year-round	subsidy
Inis Mór (Inishmore), Aran Isles	BNI	pds	4.83	year-round	subsidy
St. Marys, Scilly Isles	BNI	pds	9.33	year-round	no subsidy
	Twin Otter	pds	6.00	year-round	no subsidy
Islay, Inner Hebrides	BNI	pds	12.14	year-round, twice weekly	SADS (non PSO)
	Saab Jet	pds	2.72	year-round	

Notes

- 1 St. Mary's provides a BNI benchmark fare/nm unsubsidised
- 2 Twin Otter cheaper than BNI when demand higher and there is full occupancy
- 3 Exchange rates used Euro to pds: 5.76 Euro = 4.83 pds

Table 8.6

Adult Sea-fare Comparisons per nm: Return Trip							
	Ferry (RoRo) Vessel	Cargo Vessel	Currency	Ferry Fare per nm	Ferry Operations	Cargo Operations	Subsidy Conditions
Montserrat, DT	Caribe Queen	Local small cargo vessel to Antigua	pds	2.12	new ferry type, year-round service, minor freight capability	small vessel to/from Antigua. Private Regional RoRo operations	subsidised ferry operations
Inis Mór (Inishmore), Aran Isles	Music of the Seas, Magic of the Seas	Previously MV Oilean Arann	pds	2.08	in the past fast year-round ferries offered mixed passenger and small freight operations. Present operations are seasonal and passenger only	current status unknown as of late cargo vessel appears to have been withdrawn	subsidy
St. Marys, Scilly Isles	Ferry Scillonian	Gry Maritha	pds	7.50	old ferry type 500 passenger with some freight capacity, summer only service. Vessel due for expensive replacement soon	efficient present year-round cargo operations also have limited passenger capacity	None - however replacement passenger vessel will be required soon and some Govt. support may be required for combined year-round ferry plus cargo vessel
Islay, Inner Hebrides	MV Finlaggan - Fionnlagan		pds	na	efficient modern RoRo ferries accommodating cars and trucks as well as 500 passenger		Claims of unfair competition in Islay services made due to previous RoRo vessel purchase(s) subsidy by Calmac's (State) owners
	MV Hebridean Isles - Eileanan Inne Gall		pds	na			

