

PHYSICAL DEVELOPMENT PLAN

for North Montserrat

2012-2022

April 2012

GOVERNMENT OF MONTSERRAT
Physical Planning Unit
Ministry of Agriculture, Land, Housing and the Environment



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FOR
NORTH MONTSERRAT
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Ministry of Agriculture, Land,
Housing and the Environment



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EXECUTIVE SUMMARY

Moving forward
Montserrat 2012-2022

EXECUTIVE SUMMARY

Introduction

Fifteen years on from the eruptions that devastated the livelihoods and economy of Montserrat, the Soufrière Hills volcano continues to give reason for caution. However, the current hazard rating gives hope that the reduced level of volcanic activity will permit and encourage Montserradians to undertake concerted efforts to redevelop the island. To guide these redevelopment efforts Government has produced a Sustainable Development Plan (SDP) aimed at achieving a viable, self-sufficient population by the year 2020.

An important feature of this updated Physical Development Plan (PDP) is its alignment with the SDP. As such, this PDP provides a framework for land planning decisions that complement key economic drivers, and makes suitable provision for residential and recreational space, and for essential infrastructure. The plan also provides for the protection of Montserrat's natural environment and its cultural heritage, both of which are central themes in the SDP.

Many consultation meetings took place during the compilation of this PDP to identify the needs and priorities of local communities, business sectors, tourism and the diaspora, while not forgetting the core functions and responsibilities of Government. The PDP team wish to extend their gratitude to all parties within and outside Government who have contributed to the successful completion of this PDP.

Overall Approach

The overall approach to updating the PDP is guided by the statutory requirements of the Physical Planning Act (2002).

Considerable development has taken place during the last ten years, some of which was not fully predicted in the 2000-2009 PDP. But there are also some developments that were anticipated that have not been accomplished. Updating the PDP therefore commenced with an assessment of existing conditions with regard to land use and tenure, demographic and social conditions, public and social infrastructure, the island's environment and cultural heritage, and cumulative social impacts up to 2010. This provided a basis from which development plans could be produced and against which the cumulative socio-environmental impacts of development may be assessed.



The SDP was studied to identify social and economic development targets and discussions were held with the Ministry of Economic Development and Trade to agree primary economic drivers, and possible businesses and job opportunities that would initiate population growth. These considerations informed likely infrastructure requirements and land use. These were cross-checked for consistency and an evaluation was made of developable land area to ensure that the vision for Montserrat at 2020 could be reasonably accommodated within the non-Exclusion Zone part of the island.

A set of principles for regulating and promoting land use and development was developed and agreed with the Planning and Development Authority (PDA). These were supplemented by principles for management of Montserrat's environmental and cultural heritage, for considering disaster risk reduction and the anticipated effects of climate change, and to ensure social inclusion. These are described in Section 3 of the PDP.

Using the projections of economic activity and population growth, supplemented by extensive stakeholder consultations, an assessment was made of future land use requirements. The most significant land use requirements are tabulated in Section 4. An evaluation of development potential was then undertaken by considering committed and proposed projects, the SDP's commitment to protecting Montserrat's environment and cultural heritage, measures to reduce the risks associated with natural disasters and climate change, and aviation regulations. The result of this evaluation is tabulated at the end of Section 5 in terms of available land for development in each area of north Montserrat.

Section 6 provides details of the agreed physical development strategy. Local Area Plans for each community and primary development area are provided in Section 7.

The current composition and future expansion of local communities were considered in order to update the previous local area plans, along with the anticipated type and size of businesses, to ascertain possible land use patterns that accord with good land planning practices. This involved extensive interaction with local communities, business leaders, non-governmental organisations, society groups and the respective government departments.

As Montserratians strive to rebuild their economy and livelihoods care must be taken not to irreparably damage areas that define the island's history and culture, and which will form the backbone of future tourism. A strategic assessment was also made of the environment and cultural heritage in order to identify potential areas of conflict and sensitive areas that should be protected from development.

Consultations were held with a wide range of stakeholders to explore the possible social impacts of current and longer-term policies that will shape the future of Montserrat. This resulted in the production of development scenarios, which were reviewed by the Planning and Development Authority (PDA) and all ministers and ministries, before inviting representations from the public, the diaspora, and interested parties during the statutory sixty-day consultation period. The period of public consultations closed in December 2011, following which the Planning and Development Authority (PDA) considered all representations and the PDP was finalised accordingly and submitted to the Governor in Council for approval.

Key Features of the PDP

The PDP aims to integrate a wide range of issues into a physical development strategy that supports the SDP development objectives. The plan aims to facilitate social development and economic growth activities, identified via public consultations across Montserrat, while ensuring that people have access to a wide range of services locally, have access to appropriate housing and community facilities, and are able to maintain or attain a high quality of life. The strategy must also support the valuable environmental and built heritage assets that underpin socio-economic development of the island through tourism, quality of life, and water provision. The key elements of this updated PDP are:

A new capital town at Little Bay

Since 1999 Little Bay has been considered as the new capital town and economic centre for Montserrat. Government is now advancing plans to develop Little Bay, and Carr's Bay to provide modern, efficient and attractive residential, commercial and tourism-related facilities that will spearhead the island's economic recovery.

It is proposed to develop a port at Carr's Bay that will accommodate cargo vessels, the ferry, small cruise-ships and some large yachts. A quayside along Carr's Bay would be developed as the new town's waterfront, providing local business opportunities by way of shops, cafés and so on. This waterfront would extend northwards from Carr's Bay to the seaward end of Piper's Pond and then eastwards to the new market within Little Bay. Little Bay will comprise a high-end resort and residences, government buildings and mixed use commercial and business facilities, along with the existing cricket pitch and the heritage quarter focused on the National Museum and Volcano Interpretation Centre.

The existing jetty at the north end of Little Bay will be developed into a yacht marina, with a boatyard and boat repair facility in the Little Bay Ghaut area, creating

a potentially significant new business opportunity. Provision will be made adjacent to the marina for a fishermen's safe quay and possibly a "Fishermen's Village".

A resilient network of decentralised village centres

While Little Bay and Brades will provide many of the island's services, retail and commercial facilities, the island's other village centres will continue to meet the retail and commercial needs of local communities. This will ensure local access to services and, following lessons learnt from the loss of Plymouth, will avoid the risk of locating all services in one location.

Adequate and appropriate housing

Infilling and consolidation of existing settlement areas will meet most of the projected residential development needs during the plan period. As identified in *Section 5.7*, several significant new sites can be developed if there is demand for larger housing development projects. The maximum densities of housing plots will be such that residents are able to own an area of garden. As development increases in the future and during the next PDP plan period it is anticipated that residents in Montserrat will need to accept higher density housing in some areas.

Social housing will occur in areas of high and medium density housing and will be mixed with private properties to ensure that areas of low income households are avoided.

Community Facilities

The PDP includes Local Area Plans for each community that take account of the need for community services and social infrastructure such as health centres, schools, recreational areas, and local shops. Care will be taken to avoid segregation of communities. The intention is to create desirable communities with a mixture of age groups and backgrounds and to provide the facilities that a vibrant community requires. Consideration has been given to public transport and traffic flows and, where appropriate, self-contained communities with a balanced mixture of land uses will be encouraged. Public spaces and recreational areas for local sports and cultural events will enhance quality of life and the sense of community.

Island-wide Recreational Facilities

Beach areas, a public park, and a golf course will encourage people from all communities to socialise together, enhancing the island-wide "Montserratian" spirit. The plan promoted local access to recreational space for each village level

community. It is recognised that until volcanic activity can be considered consistently low, it will be difficult to encourage investment in areas south of Nantes River. However, to avoid imbalances in social and economic development opportunities, regular national events and catalyst projects will be promoted in areas such as Salem to encourage private investment into the area.

Tourism Infrastructure

The new hotel at Little Bay will be the island's flagship tourism facility, supplemented by existing and new villa and guesthouse facilities across the island. Sports tourism will be promoted with a focus on Blakes Estate, expanding on the existing FIFA-standard football stadium. New facilities are likely to include a golf course with high-end villas and an international standard tennis centre.

Government Buildings

While the new Parliament building will be located at Little Bay, government offices will mostly be at Brades. Care will be taken not to impede access and egress for emergency police and fire vehicles at the Brades compound and an additional access is to be considered to the south of the site.

Commercial and Industrial Developments

In addition to community-based businesses in each area, land will be made available for commercial and industrial businesses. Subject to volcanic activity, the upper Belham Valley will be used for sand-mining and aggregate production. Spin-off businesses may be located appropriately nearby.

Further industrial developments will be encouraged in designated areas in Brades and Carr's Bay. There is flexibility for commercial development across much of the Local Areas and an emphasis on commercial activity in designated areas.

Agriculture

Global food security issues and high import costs currently leave Montserrat in a vulnerable position. Sufficient land is allocated on the northern and south-western fringes of the protected Centre Hills forest to meet and exceed the national food production targets. It is envisaged that agricultural production will benefit from new techniques and the use of greenhouses and net-houses, reducing the amount of land required and the incidence of insect pest damage to vulnerable crops. MAHLE will encourage backyard gardening by ensuring appropriate housing densities.



Sand Mining

For the foreseeable future and subject to volcanic activity, sand-mining activities will be based in the upper Belham Valley area. Sand mining will be managed in such a way as to minimise the impact on nearby businesses and residential areas and on the environment. A lower mining limit has been established by Government with the intention of mitigating adverse impacts. All sand-mining activities are subject to the *Health, Safety and Environmental Management Guidelines for Sand Mining in Montserrat: An Operational Plan for Reducing Environmental and Social Impacts* (2012), to be enforced through appropriate management and legislation.

Infrastructure

A breakwater and port will be built at Carr's Bay as a primary economic driver and a critical addition to Montserrat's infrastructure. This will enable Montserrat to take advantage of the bespoke cruise-ship industry targeting ships of up to 1,000 passengers. The new facilities will also accommodate the ferry and cargo vessels. An appropriate layout for the port area will be adopted that provides for the safe and efficient movement of passengers separate from freight and hazardous materials. Suitable provision will be made for a safe haven for fishing boats, in a manner that integrates with adjacent developments and the local environment.

The runway at Gerald's airport can accommodate air movements associated with the target resident population, tourism and business activities, but suitable measures will be taken to enhance safety, including relocation of the control tower and administrative buildings, and possible realignment and/or extension of the runway. Modifications will be made to the terminal building to improve the processing of passengers through immigration and security and facilities commensurate with high-end tourism, such as upgraded departure lounge with duty-free shopping and restaurant, and a VIP lounge.

The successful implementation of geothermal energy will be a primary economic driver for Montserrat. Explorations are planned to be completed by early 2012, which, it is hoped, will prove a substantial resource, sufficient for domestic use throughout the period of this PDP and sufficient to permit economically viable exports of electricity to Antigua.

Water demand up to 2022 is expected to be about double the current figure. The golf course, water-bottling and agro-processing, and an increasing population and tourism sector will all place demand on the system, especially during the drier season. However, supply rates from the current springs and wells would suffice, especially with the introduction of demand management measures.

The installation of high-speed fibre-optic links with Guadeloupe and St Kitts is a high priority. It is hoped that when combined, geothermal energy and the fibre-optic links will quickly lead to spin-off industries and businesses, particularly in the IT sector.

Steep hilly terrain is a common feature of small volcanic islands, which makes road building and maintenance expensive, and limits the opportunities for upgrading, widening or new routes. This PDP has considered possible future traffic levels and has made provision for a selected number of new routes, some of which will improve normal traffic circulation, while others are aimed at addressing the possible consequences of climate change or easing post-disaster recovery operations.

Sewage treatment of small isolated houses will continue to be on individual (septic tank) systems but, where appropriate, communal systems will be introduced.

The overall size of the solid waste landfill site is deemed to be adequate for the period up to 2022, but measures will be taken to reduce waste going to landfill via the principles of “reduce, reuse, recycle”.

Minimising vulnerability to disaster

Land and infrastructure development is proposed in a manner such that vulnerability is reduced to the range of disasters that Montserrat is likely to experience, including the anticipated effects of climate change. This is reflected, for example, in the location of critical infrastructure. Where land use planning is unable to minimise the risk to residential areas to phenomena such as hurricane wind speeds, it is crucial to address these risks through enforcing appropriate Development Standards, as shown in *Section 8* and building codes.

Some areas are perceived to be at a slightly higher risk from volcanic activity, such as Hazard Zone B, including much of Salem, but perhaps at a higher risk of falling into a cycle of degradation as a consequence. It is important to support social and economic development, making these areas vibrant and attractive places to live and work.

Environmental and Cultural Heritage Resources

Montserrat's environmental and cultural heritage resources are a cornerstone of the island's future. Its environmental assets are of national, regional and global conservation significance; as a system, it protects local livelihoods and will play an increasingly important role in an ecosystems-based approach to managing the future effects of climate change.

All new developments are expected to conform to enhanced environmental standards in order to develop Montserrat as a “green” and ecologically aware

island. Public awareness will be raised with regard to the benefits – environmentally and economically – of improved building construction methods and a new Montserrat building code will be issued to enforce these measures.

A suite of policy measures are designed to maintain the integrity of the protected forest areas of the Centre Hills and to manage its resources for the benefit of all; its springs provide all of Montserrat's potable water; its contiguous forest acts as a buffer against the impacts of natural disasters and within its leafy canopy are plant and animal species found nowhere else on earth including the iconic and critically endangered Montserrat Oriole and the Montserrat Galliwasp.

In other areas, sensitive development that enables the people of Montserrat to enjoy the hidden corners and beautiful places of the north may be permitted. The 75 acres of protected forest at the Silver Hills are surrounded by approximately 1,600 acres of scenic landscape of archaeological importance. Geologically the oldest part of Montserrat, the coastal cliffs also support breeding populations of internationally important sea birds. Proposals for this area seek a balance between conservation and non-invasive ecotourism development, recognising the cultural significance of the land for North Montserratians. Further south and strategically located between proposed developments at Little Bay and Carr's Bay, the integration of elements of Pipers Pond with the new town provides another important opportunity to balance conservation with development.

Montserrat will protect its network of green buffer zones between the main settlement areas, maximising the views, access to and enjoyment of green space. Strict controls on development in other parts of the island will be required not just for the conservation of Montserrat's rich natural environment and biota, but in order to protect agriculture and fisheries based livelihoods and beach, dive and ecotourism. This includes restricting development in and around ghauts and adopting a risk reduction approach to the location of infrastructure in high-risk areas.

This risk reduction approach is intrinsically linked to the recognition that as an island nation located in close proximity to the subduction zone of the Caribbean plate boundary and that Montserrat is extremely vulnerable to the effects of extreme natural events and to the impacts of anticipated climatic changes. Climate change and disaster risk management measures are, therefore, mainstreamed through every aspect of the PDP.

As an integral part of the environment, the PDP has identified the island's unique sites of built and cultural heritage as important reference points for future development and has recognised the role they play in fostering a sense of national identity and pride, particularly as the nation enters a period of significant potential demographic transformation.

Government's Land Policies

The PDP contains detailed policies and guidelines for promoting and controlling development for north Montserrat. This PDP contains an overall development strategy for land use planning for north Montserrat and further, more detailed land use zoning and policies for the main settlements areas. These are addressed in Local Area Plans, prepared for Lookout; St John's; Barzey's; Gerald's and Drummonds; Little Bay, Carr's Bay, Davy Hill; Cudjoe Head and Brades; St Peter's; Woodlands and Olveston; Salem, and Old Towne, Isles bay and the Belham Valley.

Policies are enforced through the planning process where planning permission for all proposed developments is granted by the PDA subject to relevant compliance.

It is recognised that some economic development initiatives may arise after completion of this PDP that require some changes to land use patterns envisaged by the PDP team in 2011. The principles used in developing the plan (outlined in *Section 3 – Planning Parameters* and *Section 5 – Land Available for Development*) should provide sufficient guidance for accommodating such initiatives.

Guidelines for Implementation of the PDP

The successful implementation of this PDP is contingent on a number of factors, including:

1. Government securing the requisite **funding** to finance its part of the development proposals;
2. The **private sector** actively playing its role in terms of investing proactively and making land available (even though it might retain ownership) for housing, and commercial and industrial developments as outlined in the plan;
3. The swift and satisfactory completion of **improved air and sea access, geothermal energy** production, and **ICT links**;
4. Gaining **wide support** to the plan's objectives and provisions among members of the public, the business community, and development partners;
5. Successful conclusion of **contracts with cruise ship liners and tourism companies** to actively develop a vibrant commercial tourism industry;
6. Encouraging the development of a **golf course** and **high value residential tourism**; and
7. Creating and sustaining the conditions that continue to **make Montserrat a highly desirable place in which to work and to live**

Status of the Plan

This document constitutes the Physical Development Plan for the north of Montserrat for the period up to 2022. The current physical planning context for the island is provided by the Physical Planning Act, 2002 and the previous PDP (2000-2009) which was valid until superseded by this document. While this updated plan contains many of the key features of the previous PDP (2000-2009), thereby providing for development planning consistency, this document contains some important new land use zonation, planning guidelines and development standards.

[The plan was approved by the Governor in Council on xx April 2012 (Cabinet Minute No. xx/12)].



What will Montserrat be like in 2022?

How can Montserrat develop sustainably?

These questions were posed to school pupils in 2011 for the PDP 2012-2022 Picture Competition. Pupils in Grades 4 to 6 of the primary schools and pupils in the Montserrat Secondary School submitted a number of inspiring entries and the winners are displayed below.

1. Runner-up: Primary School Category

Nikeisha Scotland, Grade 4, Lookout Primary School

A vision for Montserrat in 2022

2. Winner: Primary School Category

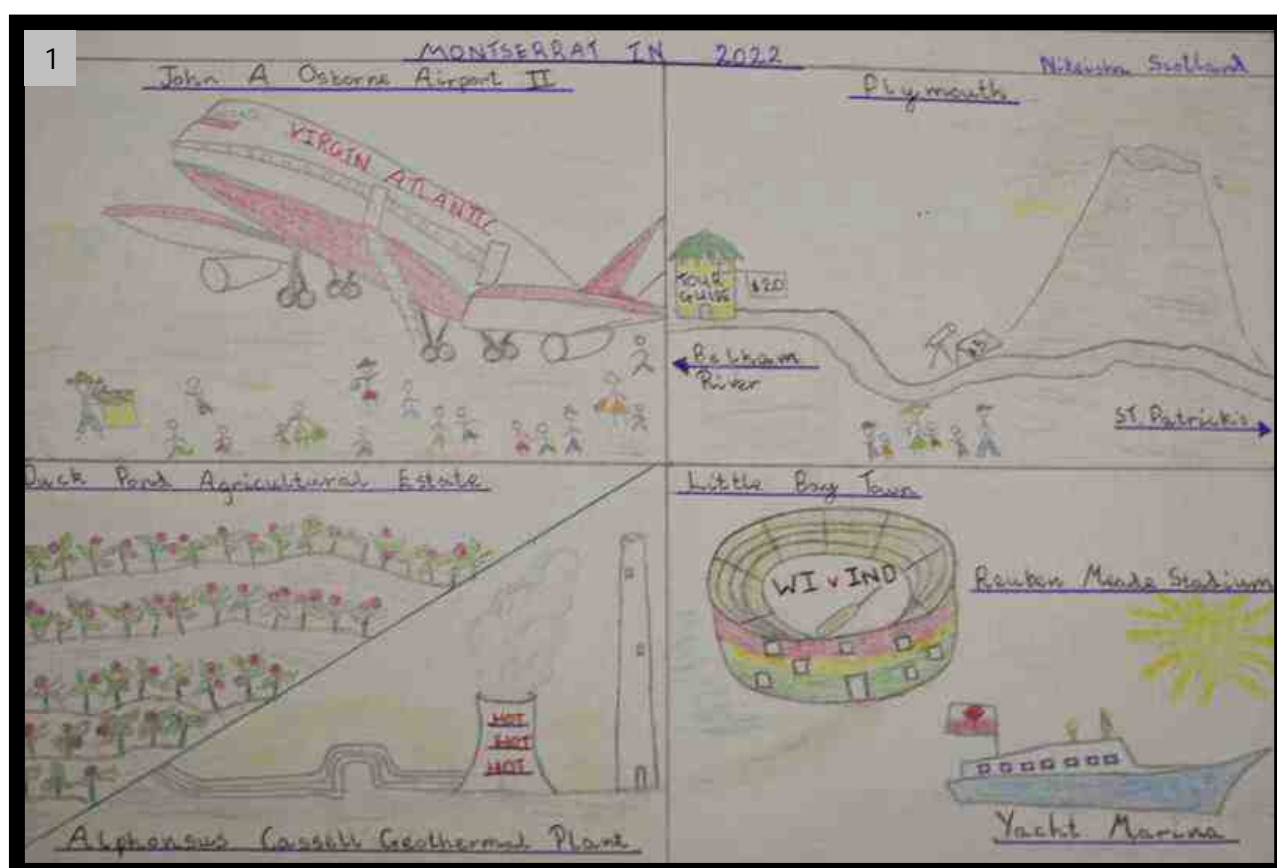
Shemarrie Weekes, Grade 5, Lookout Primary School

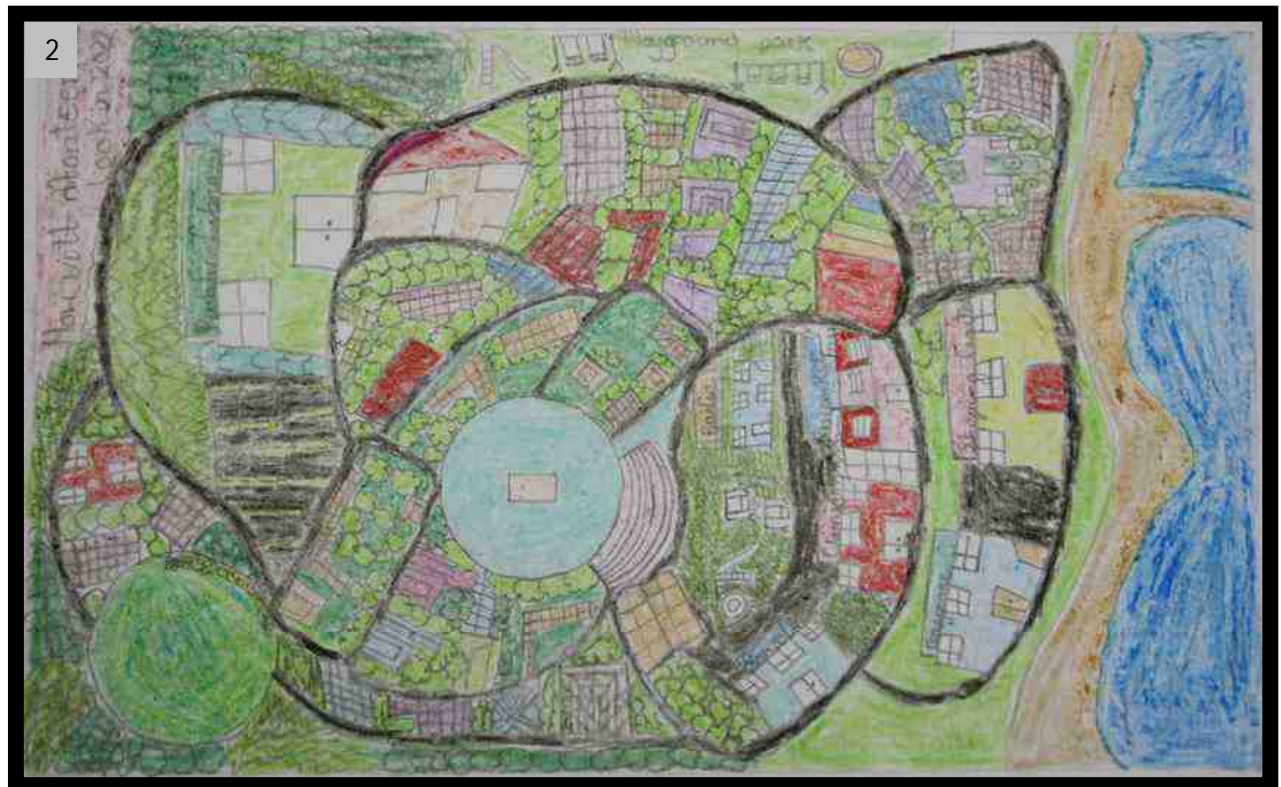
The new town successfully developed at Little Bay

3. Winner: MSS Category

Jerely Browne, MSS

A view from Little Bay in the years to come





1. Introduction

1.1 Purpose of this Document

The purpose of this national Physical Development Plan (PDP) is to provide a framework to guide planning decisions for all development activities and land use alterations. It will guide the holistic development of the built environment in northern Montserrat during the period 2012 to 2022, consistent with Government's vision for a sustainable and prosperous nation.

It is widely hoped that the Soufrière Hills volcano has passed into a less violent phase such that Montserratians can fully recover from the devastation that has ruined livelihoods and the economy since 1995. However, the risk of further volcanic action remains and, with some exceptions such as geothermal energy extraction, redevelopment of Montserrat must be restricted to the northern part of the island. In 2011 this includes Hazard Zones A and B. It is not expected that Hazard Zone C will become inhabitable during the plan period, although it is likely to remain open for day time access.

This provides a total land area of about 16 sq miles in which redevelopment activities can take place. It is hoped that by 2022 Montserrat will be home to a resident population of approximately 10,000 people and will cater for some 15,000 tourists per year. The redevelopment activities outlined in this document recognise the importance of the Centre Hills (which accounts for 4 sq miles) and other areas of environmental and cultural importance. Failure to respect and protect these areas will not only compromise the quality of life for future Montserratians, it will harm the very aspect of Montserrat that is central to its tourism product upon which economic recovery greatly depends.

There is a need to carefully plan and allocate land in northern Montserrat in a manner that avoids conflicts between land users and to protect the island's unique (and already endangered) flora and fauna. The aim of this document is to guide decisions regarding land use allocation and development to achieve sustainable and equitable development for all Montserratians and others who wish to work and reside within the northern 16 sq. miles (10,240 acres) of this tranquil and beautiful island.

1.2 Specific Objectives of the PDP

Policies and proposals in the PDP will help Montserrat and its people to make positive progress towards the vision outlined in the SDP and through the consultation process. The specific objectives of the PDP are set out below.

1. To maximise opportunities for the population to return to a viable level by the end of the plan period.
2. To maximise opportunities for economic development and employment in all sectors.
3. To improve and increase the existing housing stock so that the whole population has access to appropriate private housing of sound construction.
4. To encourage owner occupation of residential property.
5. To ensure that society's vulnerable persons are appropriately housed and cared for.
6. To ensure that new developments are properly planned and set out in accordance with the relevant standards.
7. To ensure that social and community services are provided on an economic, efficient and equitable basis and are accessible to the whole population.
8. To ensure the sustainable use of natural resources both on the island and in the surrounding waters and to minimise the adverse effects of development.
9. To conserve and protect sites of landscape, ecological, historic and cultural value and to ensure they fulfil a role in the future development of the island.
10. To protect agricultural land from loss through development and to improve access for local farmers to agricultural areas.
11. To ensure that Montserrat has appropriate standards of sea and air links.
12. To encourage the efficient and effective provision of service infrastructure to make the most of available resources.
13. To encourage the efficient use of energy and water and to develop geothermal energy as a primary socio-economic driver.
14. To reduce the impact of vehicular traffic on settlements and to support and to encourage scheduled, privately or publically operated transport.
15. To avoid the risk of environmental pollution from the disposal of liquid and solid waste.
16. To reduce vulnerability to the potential effects of climate change and minimise the risks posed by potential natural and manmade disaster.

1.3 Statutory Requirements for updating the PDP

The Physical Development Plan is a statutory document, the content of which is prescribed by the Physical Planning Act (2002), Part III, which states that the PDP shall include:

- A statement of the principal aims and objectives with respect to the development and use of land in each area of Montserrat;
- A report on the existing conditions of each area of Montserrat including:
 - the principal physical, social, economic and environmental characteristics of each area including the principal purposes for which land is used
 - the size, composition and distribution of population
 - the communications and transport systems and traffic
 - the public services and the physical and social infrastructure provided
 - any other matters which may affect the development and use of land
- A statement of the policies, proposals and programmes for the future development and use of land in each area including principles for regulating and promoting the use and development of land and measures for the maintenance and improvement of the environment.

The statement of policies, proposals and programmes shall have regard to current economic policies for the development of Montserrat and to the resources likely to be available for the carrying out of such policies, proposals and programmes.

Government conducts island-wide censuses every ten years; the next census is due in 2021. Future updates of the PDP will be scheduled for the year following each census so that information arising from the census can be taken into account when updating the PDP. The next update of the PDP will be in 2022.

1.4 Format of this Document

This document begins (*Section 2*) by describing the existing situation in north Montserrat in terms of its topography, environment, heritage and archaeology, its vulnerability to natural disasters, the current settlement patterns and land use, and the island's current demographics, socio-economic trends and social and physical infrastructure.

Section 3 introduces the planning parameters and the main principles used for developing the Physical Development Strategy.

Land use requirements are summarised in *Section 4* and an evaluation of development potential is presented in *Section 5*. The evaluation takes into account committed and proposed development initiatives, the SDP commitment to protecting Montserrat's environment and cultural heritage, and the need to minimise vulnerability to the effects of natural disasters and climate change.

The Physical Development Strategy in *Section 6* comprises a comprehensive set of national land use policies that will inform and guide land use planning decisions for the period up to 2022.

Local Area Plans are provided in *Section 7* for each of the main settlement areas. These have been developed in order to control development such that communities evolve while addressing the needs of each area. Land use zoning helps to designate suitable space for desirable residences, local shops and services, industrial space and social infrastructure. Local land use policies are to be read in conjunction with national policies in *Section 6* and provide detailed planning guidance for each community. At an island level, the Physical Development Strategy aims to bring together all communities, businesses and other facilities to reflect the "Montserratian spirit". This theme is reflected in the plans for all significant new developments, including Little Bay and Carr's Bay.

The Development Standards are set out in *Section 8*. These guide developers and the Physical Planning Unit on the specific limits and standards required to produce practical, safe, inclusive, well designed and generally sustainable developments.



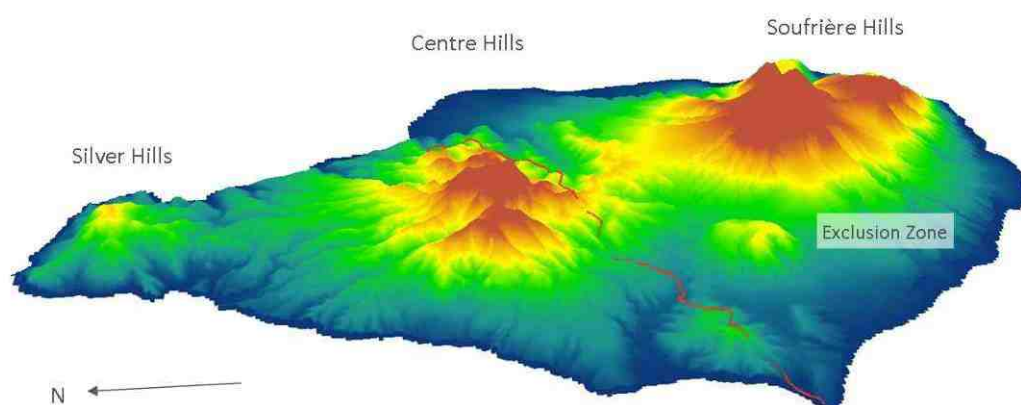
2. Existing Conditions (2011)

2.1 Environmental Resources

2.1.1 Topography and Drainage

The topography of Montserrat is dominated by four volcanic massifs, each in turn cut by numerous valleys and ghauts radiating towards and truncated at a coastline of predominantly steep cliffs, with just a handful of sandy bays and low lying inland flatlands. The massifs from north to south are the Silver Hills (403m), Centre Hills (740m), Soufrière Hills (pre-eruption 914m at Chances Peak) and the South Soufrière Hills (756m). The Silver Hills is the oldest part of the island and the original crater can be visited to the north west of the Silver Hills.

Figure 2.1 Topography of North Montserrat



This extremely rugged pattern of topography has strongly influenced land-use and placed a premium on available developable lands.

The island's drainage system is radial in character with stream channels emanating from both the Silver Hills and Centre Hills. None carry perennial surface water runoff from the island; flow is restricted to times of heavy rainfall and discharges from springs in the Centre Hills. Much of this spring flow is captured in the upper reaches of the water sheds to provide essential water supplies as described in *Section 2.14*.

2.1.2 Geology and Soils

The soils of Montserrat are predominately Andosols, dark coloured soils developed from parent volcanic material such as ash, tuff and pumice. The island's small size, steep topography and relatively young age have restricted soil development in much of the north: a critical issue for agriculture and development. In the higher reaches of the upland watersheds in the Centre Hills, deeper free draining Kandite Latosolics are found in the critically important spring recharge areas.

2.1.3 Climate

Montserrat's climate is Marine Subtropical, with a prevailing North-easterly trade wind and an average annual temperature of 28°C with seasonal lows in January and highs in September. The island's mountainous topography has created remarkable rainfall gradients within very small areas; rainfall is highest in the south and west and lower in the north and east, varying from an annual median of 1,070mm in drier coastal areas on the eastern side to 2,500mm in the Centre Hill peaks.

In broad terms the dry season runs from February to June and the wet season from July to January. The wet season generally coincides with the Atlantic hurricane season, which sends hurricanes north-westwards towards the eastern Caribbean and Montserrat, bringing high winds and torrential rain; in low lying areas this is accompanied by a heightened risk of storm surge.

2.1.4 Terrestrial Ecology

In line with other Lesser Antillean Islands, Montserrat has a rich biota and a very high level of endemism. There are plant and animal species on the island that are found no-where else on earth. The health of these species and careful stewardship of the natural environment is intrinsically linked to the island's future. That stewardship is in turn reliant on the effective enforcement of environmental and planning regulations. Many of these regulations require updating; a Conservation and Environmental Management Bill was drafted in 2007 but has not yet been passed by Council and the regulatory framework to support institutional changes, including the creation of a new Department of Environment is not in place. Procedures for Environmental Assessment are unclear and current fines are derisory. It is anticipated that these matters will be addressed in 2012 once the draft Bill is enacted.

Uncontrolled grazing; roaming feral and loose livestock and vegetation clearance for development and agriculture combine with the effects of volcanic ashfall and predation by non-native species to create a web of man and naturally induced threats to the delicate balance on Montserrat.

Protected Areas

There are 3 terrestrial protected areas on Montserrat covering 11 percent of the total land area and 30 percent of north Montserrat.

The **Centre Hills Forest Reserve** is recognised as a site of global ecological and biodiversity importance and the primary source of all the islands potable water, its vegetative cover is essential for the continued maintenance of Montserrat's key watersheds and springs.

The **Silver Hills Forest Reserve** covers 75 acres of forest surrounded by a complex mosaic of habitat and human activity. Much of the vicinity is of outstanding landscape value with important areas of dry forest and a number of hiking trails.

The **Pipers Pond Wildlife Reserve (and the associated Potato Hills Conservation Area)** represents the last tract of mangrove swamp on island, supporting some birdlife, but no longer performing its coastal management function; over 20 years of neglect has led to extensive siltation.

All **ghauts** play an important role in watershed management and for the biota they support; they all have de facto conservation status.

Vegetation

The vegetative cover of Montserrat is largely determined by the levels and distribution of rainfall, which is in turn closely linked to elevation. The pattern of vegetation differs markedly from coast to mountain top, ranging from littoral vegetation influenced by wind and salt spray on coastal strips to ecologically valuable dry forest along ghauts and hill ridges (particularly the east coast) to moisture hungry mesic and wet forest in the higher altitudes of the Centre Hills.

A biodiversity assessment in 2008 confirmed the Centre Hills to be the most important area for bio-diversity on Montserrat. The flora comprises of approximately 1,000 plant species of which nearly 800 are native and two endemic: the *Rondeletia Buxifolia* ("the Pribby") and the *Epidendrum Montserratense* ("Montserrat Orchid"). Both have extremely restricted distributions, the vast majority of which are not protected. A third endemic plant, a type of Willow, *Xylosma serratum*, is feared extinct.

Not only is the vegetation of Montserrat of national, regional and global conservation significance, but as a system, it protects local livelihoods and will play an increasingly important role in an ecosystems based approach to managing the future effects of climate change. For example, all potable water comes from the Centre Hills. The forested slopes act as a buffer against the impacts of natural disasters such as hurricanes, floods and volcanic eruptions and they control soil erosion thereby protecting agriculture and fisheries based livelihoods and beach, dive and eco-tourism. The effects of Hurricane Earl in 2010 are likely to have been exacerbated by poor vegetation and land management practices.

Wildlife

Birds: The bird life of Montserrat is of international significance and interest. The forested green heartland of the Centre Hills and the ghuats that radiate from its slopes are recognised as Important Bird Areas (IBAs) and home to a diverse range of native and migratory species, including the critically endangered and iconic Montserrat Oriole (*Icterus oberi*). The Silver Hills and coastal cliffs of the north support important breeding populations of seabirds, including Red and White Billed Tropic Birds and Audubon Shearwater, while further inland in the unique and threatened dry forested areas Caribbean Martins, warblers and tanagers flourish. Although inland wetland habitat is limited, the island's largest pond at Green Ghuat (adjacent to Brimm's Ghaut), supports a significant population of Moorhen and some American Coot. Cattle Egrets roost at Carr's Bay and in woodland at Olveston, and the Brown Pelican, uncommon in the Lesser Antilles, enjoys the calm waters offered at Isles Bay and off the beaches of the north and northwest coast.

Amphibians and Reptiles: Three species of amphibian and eleven terrestrial reptiles have been recorded on Montserrat, among them the critically endangered Montserrat Galliwasp Lizard and another iconic species, the Mountain Chicken Frog. The Galliwasp sighted on average once every two or three years, is range restricted to a few hectares around Cassava Ghuat, making it one of the least known and understood reptiles on earth. Recent residential sub-divisions in the area and vegetation clearance are real threats to its survival. The Mountain Chicken Frog, once abundant and enjoyed as a local delicacy, is now found only in limited areas of the Central Hills. First a victim of loss of Wet Forest due to the volcano, the population has been decimated by Chytridiomycosis - an infectious fungal disease of amphibians and it is now the subject of an emergency programme being implemented through the DoE with funding from the UK Darwin Initiative and technical assistance from Durrell Wildlife Conservation Trust.



Mammals: The volcanic nature of Montserrat and the fact that it has never been connected to any major landmass accounts for the very limited number of wild mammals on island. The only true natives are the 10 species of Bat that occur island wide. Four of the species are widespread across the Caribbean, but the rest are restricted in range and two are known only on Montserrat and Guadeloupe – the White-lined Bat and the Yellow Shouldered Bat.

Invertebrates: Knowledge of the insect fauna of Montserrat appears to be growing at an exponential rate – studies undertaken as part of the Centre Hills bio-diversity assessment brought the known number of species to 1,240, four times the number known following previous research in 2001. As with other fauna, the Centre Hills is the most studied area of the island and, therefore, the relative limit of current exploration. Of the 1,240 species, over 100 are found no-where else in the world.

2.1.5 Marine Ecology

The reef and marine system of Montserrat are under stress with multiple threats, including fishing, sedimentation and coastal currents. The reef system is not conventional; it comprises isolated patches of coral on the west, north and northeast of the island supporting a range of bottom feeders and reef fish in water depths up to 20 meters. Deeper waters offshore support larger populations of bottom feeding grouper, snapper and butter fish. Previous studies have recognised the exceptional value and diversity of these reefs and recommendations had been made for a mixed use marine reserve, balancing needs of fisherman with marine conservation.

However, there have been rapid changes in the condition of the reef and these proposals no longer appear viable. Volcano related sedimentation, combined with poor land and construction management has destroyed reef areas south of Woodlands Bay; badly degraded areas from Woodlands to Little Bay and is now threatening the health of the reef at Rendezvous and locations further north. A recent acceleration of sediment damage is attributed to the development of Little Bay and mismanagement of the adjacent Phoenix Quarry. Meanwhile, the loss of local fishing grounds due to volcanic activity has intensified fishing activity on the remaining healthy reefs and accentuated problems related to “ghost pots” which continue to capture and kill fish after they have been lost or discarded. A further threat to Montserrat’s reef system is the recent discovery of lion fish; hungry predators with a voracious appetite.

Efforts are being made to conserve and develop this valuable resource, including an artificial reef and coral harvesting programme at Woodlands Beach.

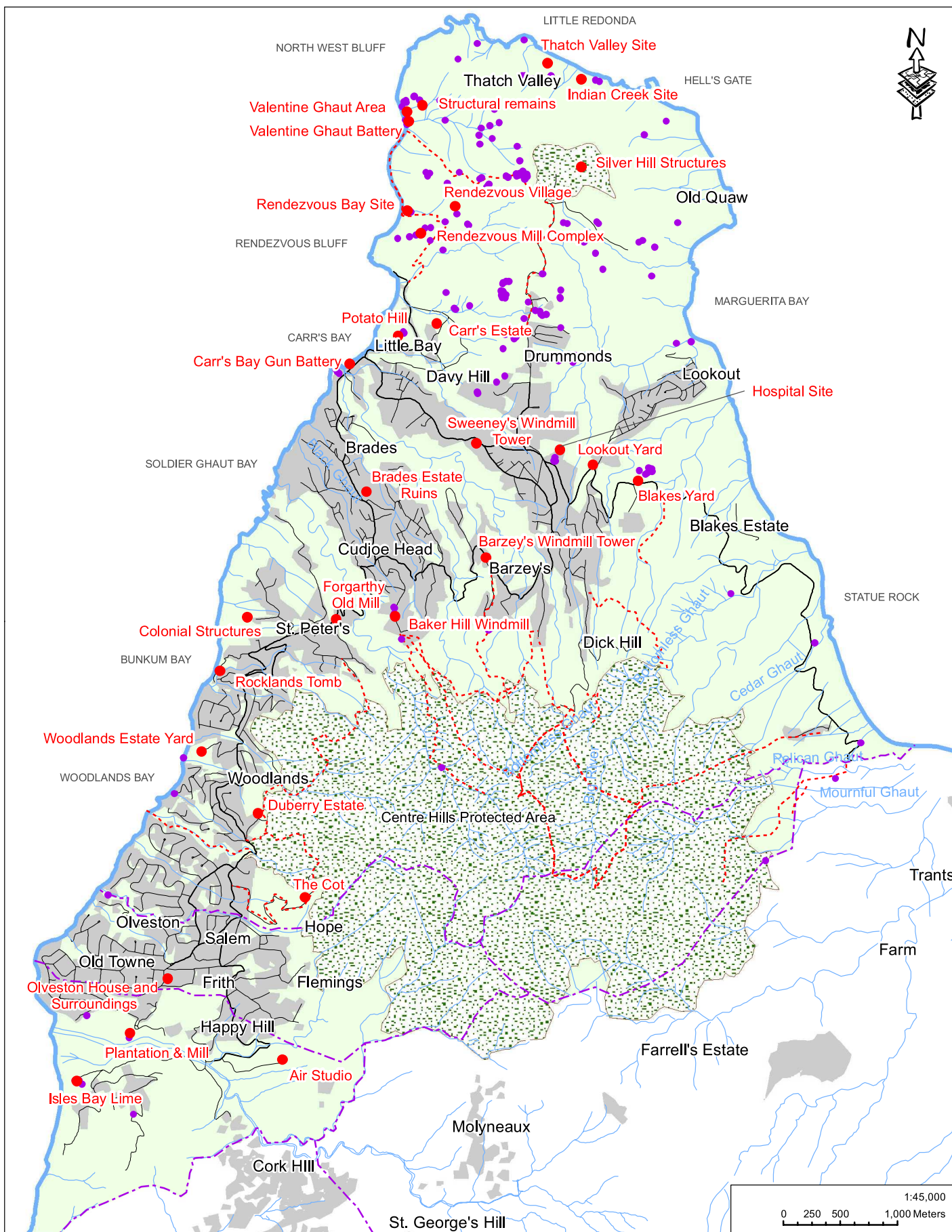
All beaches on Montserrat support nesting populations of hawksbill & green turtles, with occasional leatherback and loggerhead turtles. Key nesting beaches are Woodlands, Rendezvous, Bunkum Bay, Fox's Beach/Bransby Point and Old Road/Isles Bay beaches. Each of these species and their beach nesting grounds are protected under the International Convention on the Conservation of Migratory Species of Wild Animals (CMS). This has, however, not prevented the removal of beach vegetation, critical for hawksbill turtle nesting, nor the litter of garbage on beaches which attracts rats; rats in turn predate on turtle eggs during the July to September nesting season.

Beaches are also subject to significant erosional processes, which don't just threaten beach habitat but surrounding structures too, most visibly at Carr's Bay.

2.2 Heritage and Archaeology

Montserrat's known human history dates back over 2,500 years when the population was inhabited by the Tainos, the pre-Columbian saladoid inhabitants of the Lesser Antilles. Not much is known of this early period of the island's history and the most intensively studied and documented site now lies in the Exclusion Zone at Trants. It was not until 1632 that the island was first settled by Europeans, a British contingent from St Kitts. Although the original colonists were English and Irish (the Irish as indentured servants), Montserrat quickly became a haven for Irish Catholics escaping from religious persecution.

Known sites of archaeological and cultural heritage are, therefore, predominantly related to these two periods. There has, however, been little systematic or comprehensive survey or study of significant heritage sites in the north of Montserrat. Previous efforts focused on sites that are either no longer accessible or which have been destroyed by volcanic activity; for example archaeological and ethnographic research previously focused on locations such as Trants and Galways Plantation (see work of Lydia Pulsipher, for example), while historic building listings and examinations of the Islands vernacular architecture concentrated on Plymouth (Anderson 1993 and Oxford University 1995).



GOVERNMENT OF MONTSERRAT

Ministry of Agriculture, Land,
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Legend

- Significant Archaeology and Heritage Sites
- Archaeological features (SLAM 2011)
- Main Roads
- Minor Roads
- Rivers and Ghauts
- Hiking Trails
- Hazard Zones (2011)
- ▨ Protected Forest
- Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

Archaeology and Heritage

January
2012

Figure 2.3

Most recently the US based Brown University has updated an existing record of known sites held by the National Trust. The inventory includes sites of prehistoric and colonial heritage interest and more recent history, including the famous George Martin Air Studios. A summary of these sites is included as *Appendix F(1)* to this PDP and illustrated in Figure 2.3. The list does not, however, constitute a statutory listing. The National Trust are mandated to prepare such a listing as a prerequisite for the implementation and enforcement of key aspects of the PPA (2002) relating to the protection of Montserrat's cultural heritage. The Trust cannot do this alone. It is among the most resource constrained organisations on island and technical assistance will be required. These same capacity constraints also threaten the future of the Trust's extensive historic records and archives.

2.3 Disaster Risk and Natural Hazards

The people of Montserrat have been living with the hazards presented by the Soufriere Hills Volcano since 1995; ashfall and acid rain affect every aspect of the physical, bio-physical and human environments while the threat of pyroclastic activity defines the pattern of habitable and developable land. Alongside the omnipresent threat of the volcano, recent history has demonstrated the vulnerability of Montserrat to other natural hazards. This includes the effects of hurricane winds and rains, storm surges, inland flooding, rock falls, landslides and seismic activity.

Although Montserrat has escaped major hurricane-induced disaster since **Hurricane Hugo in 1989**, that storm is estimated to have caused up to EC\$1 billion in damage to infrastructure with extensive damage to the islands' ecosystems and biota.. Sustained wind speeds during Hugo were estimated at between 140 and 150 miles an hour, with some investigators estimating that gusts of up to 240 miles an hour may have occurred. Those winds destroyed 45 percent of housing stock; affected 98 percent of all buildings including hurricane shelters, most losing their roofs. 11 people were killed.

More recently **Hurricane Earl in 2010** highlighted the susceptibility of the island to the effects of inland flooding. Approximately 12 inches of rain fell in 12 hours bringing extensive flooding and damage to infrastructure in the vicinity of Nantes River, Runaway Ghaut, Cassava Ghaut, Collins River (to the east of Carr's Bay) and Little Bay Ghaut in which the Phoenix Quarry is situated. The Lawyers River also overtopped the A01 Coast Road taking water down to the St Augustine Primary School. There was also extensive erosion in and around smaller ghauts and streams leading to habitat loss and the devastation of private lands.

Generalised seasonal heavy rains have a number of recurring and demonstrable effects. Heavy rains bring **rock fall** where the underlying rock substrate has been exposed through vegetation removal or earthworks; at Lookout the infiltration of storm water run-off into the centralised sewage treatment system leads to occasional overtopping of the main plant constituting a public health problem in this residential area.

The **effects of high tides and storm surge** are compounding the eroding effects of wave action at low-lying Carr's Bay and Little Bay; the main A01 coast road is frequently damaged along this section. High tides and wind driven waves also exacerbate the effects of inland flooding. Overtopping of the nearby Collins River has caused extensive flooding at the island's only fuel depot and damage to adjacent buildings and facilities.

The collapse of lava domes and submarine seismic activity have resulted in **tsunamis**. The December 1997 eruption of the Soufrière Hills volcano caused a tsunami that attenuated quickly to 3 to 4 metres at Old Road Bay, and 0.5 metre on the coasts of Antigua and Guadeloupe.

Earthquakes have occurred in Montserrat caused by high-pressure magma flows within the volcano and less frequently by tectonic movements. Minor tremors are common, but there is always a risk of a larger quake somewhere in the Antillean chain.

2.4 Current Settlement Patterns and Land Use

Provisional results from the 2011 census suggest that Montserrat's 2011 population of 4,882 is spread fairly equally between the main settlement areas. These comprise Brades and Cudjoe Head, Davy Hill, St Johns, Lookout, St Peters and Salem. These areas developed rapidly in the years after the volcanic activity and residential development is generally along the ridge lines where topography is more favourable to the construction of houses. There are many smaller communities, some of which form part of the larger settlements, the largest being Drummonds, Gerald's, Judy Piece and Dick Hill.

Montserrat has a well-defined area of low density dwellings along the west coast comprising Woodlands, Olveston, Old Towne and Isles Bay. These are collectively known as the Beachettes area and the majority of dwellings are villas. Building design features and activities permitted in these plots are restricted by a Covenant agreed to when purchasing the property. Lookout is Montserrat's most recent community. It currently comprises approximately 300 dwellings and has been constructed in phases since the late 1990's.

New development is occurring throughout north Montserrat where land is available to purchase, rather than in specific locations.

Following the loss of Plymouth, Brades has evolved into the focal point and economic centre of Montserrat. The Government Headquarters are based here in a complex of buildings and the area has a higher than average concentration of shops and services. St John's, St Peter's and Salem comprise the secondary commercial and retail centres.

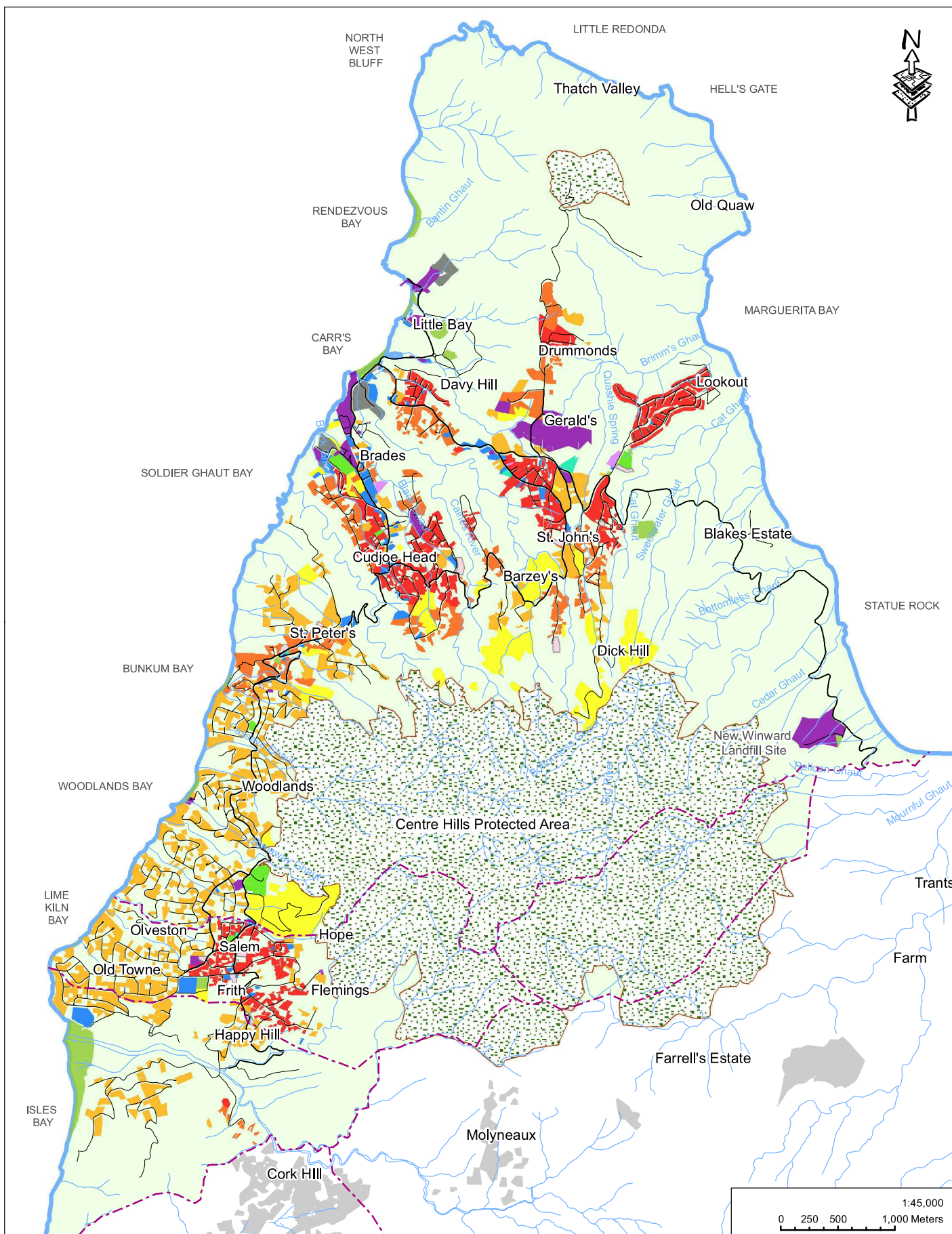
There are several existing industrial areas. In addition to quarrying stone aggregate at Little Bay Ghaut, behind the port, the area is used for vehicle storage, sand stockpiling, and storage of locally manufactured concrete blocks. The bulk fuel facility and a building block manufacturing business are located at Carr's Bay. The area around the power station at Brades is also industrial with a number of government workshops and car mechanic enterprises. Sand is currently mined in the Belham Valley area and transported via the only main road to be exported by sand barge from Little Bay.

There are two main areas of agricultural land in north Montserrat, Upper Blakes and Dick Hill (40 acres) and the Duck Pond area north of Salem (60 acres). These are leased from the landowners by the government and sub-leased to local farmers. There are many smaller and fragmented agricultural areas and many households practice backyard farming.

The Silver Hills area is generally used as pasture land and is largely unfenced. The only development in this area comprises several isolated dwellings to the north of Drummonds and a telecommunications facility at the peak. The Centre Hills is a protected forest and its ghauts are generally undeveloped, providing a network of green valleys radiating across the northern part of the island.

The majority of the east coast is undeveloped dry forest and grassland, apart from the Lookout area and the New Windward landfill site.

Figure 2.4 provides an overview of the current land use patterns in north Montserrat, mapped by cadastral land parcels.



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Legend

- | | | | | |
|-----------------------|----------------|---------------------|-------------|------------------------------|
| — Main Roads | Orange | Resi Medium Density | Light Green | Health |
| — Minor Roads | Yellow | Resi Low Density | Purple | Social Care |
| — Rivers and Ghauts | Blue | Commercial | Light Blue | Community, Recreation, Sport |
| — Hazard Zones (2011) | Pink Dashed | Government | Pink | Religious |
| Protected Forest | Green Stippled | Agriculture | Grey | Industrial |
| Resi High Density | Red | Education | Light Green | Vegetation |

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

Existing Land Use
(2011)

January
2012

Figure 2.4

2.5 Land Tenure

North Montserrat's total land area, including Hazard Zones A, B and F, is approximately 9,980 acres. The majority of land in north Montserrat is privately owned. While the Silver Hills and parts of the east coast and the Centre Hills are held in large parcels by a limited number of owners, the more densely settled areas are in highly fragmented ownership.

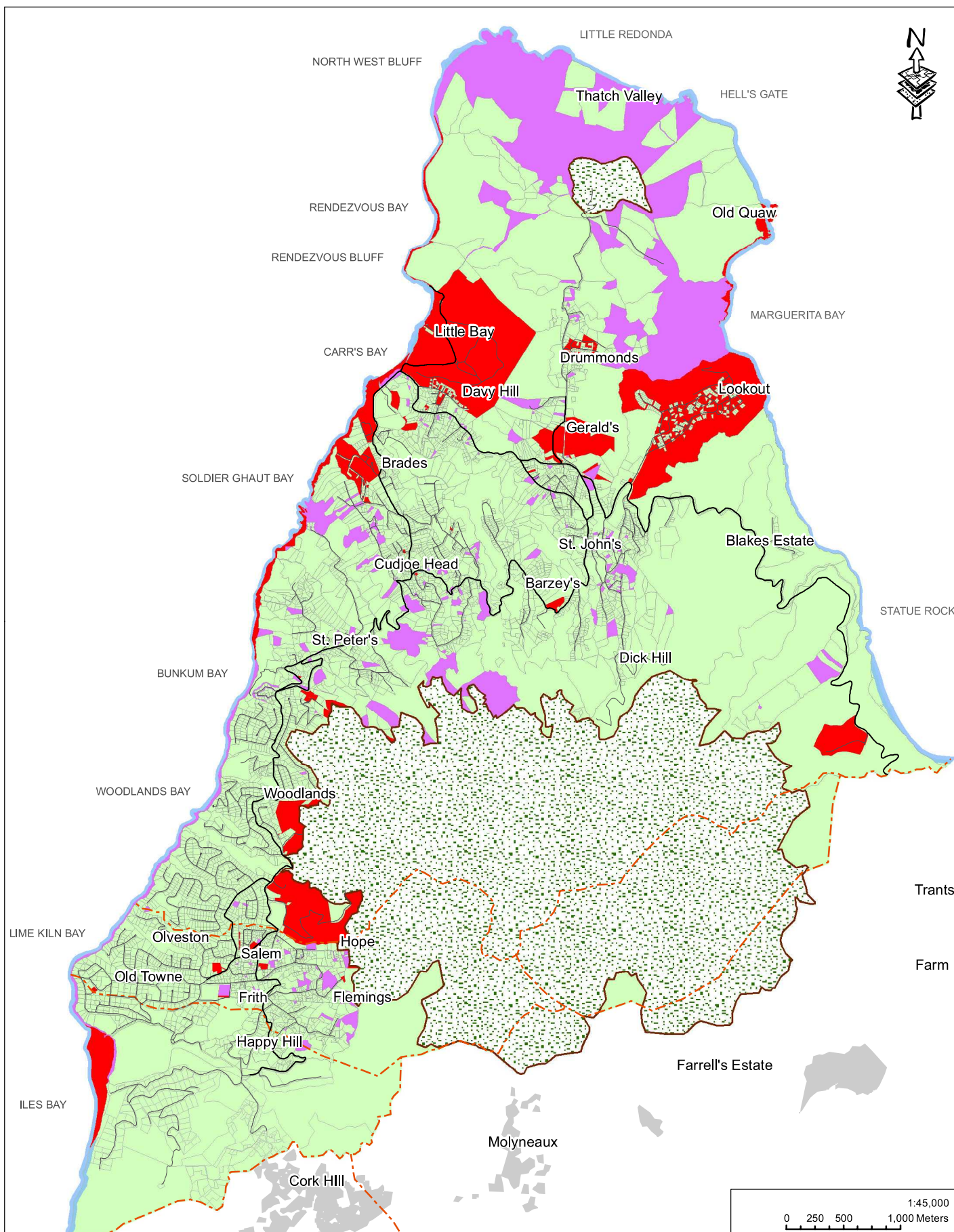
In total the government owns 1,176 acres of land as shown on Figure 2.5. This includes Little Bay Estate, Brades, Lookout, St Johns, and Salem where critical services and infrastructure are located, including Government Headquarters in Brades, the Glendon Hospital and the DMCA in St Johns, government schools, and several residential areas. Government also owns the land on which the bulk fuel facility is sited at Carr's Bay and the airport site at Gerald's. There are 948 acres of unclaimed land, designated as Crown (Unclaimed) in Figure 2.5.

A constraint to socio-economic development in Montserrat is that much of the apparently developable land is not available to buy or lease. Culturally, land is an important asset in Montserrat and many individuals and families are unwilling to sell or lease subdivisions or large tracts of land. The problem is compounded by the issue of family land where many family members have equal rights to a land parcel which makes consensus and decision making very difficult.

A further problem is the cost to the land owner of developing large areas of land. It is required by law that land to be sold is subject to a topographical survey and that service infrastructure must be provided by the land owner if land is to be subdivided for residential plots. These requirements come at a high cost which deters land owners from developing their land.

It is recommended that the Government considers a range of incentives to help unlock land for private development. These could include a loan or grant to help cover the initial cost or a public private partnership on land ownership.

There are also a number of unclaimed and unregistered land parcels, particularly in the Silver Hills. In 2006 a Bill (the Crown Title Act 2006) was passed by government to provide for the vesting of unclaimed land in the crown. Any unclaimed land not registered by 2020 will be vested in the crown and available for use by GOM.



GOVERNMENT OF MONTSERAT

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Legend

- Main Roads
- Minor Roads
- - - Hazard Zones (2011)
- Protected Forest
- Land Ownership**
- Crown
- Crown (Unclaimed)
- Private

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

**Existing Land Ownership
and Unclaimed Land
(2011)**

January
2012

Figure 2.5

2.6 Demographics and Social Conditions

2.6.1 General

Approximately two-thirds of Montserrat's resident population evacuated the island following the eruption of the Soufriere Hills Volcano. The de facto population count in September 2011 was 4,882. This figure includes visitors to the island. This unadjusted figure represents an 8 percent increase in population since the last full census in 2001 (4,491). When available the full findings of the 2011 census will provide a new robust data set to ascertain progress towards the PDP Phase III target population of 10,000 people and the goals and targets of the SDP.

Very little of this increase can be accounted for by returning Montserratians, or from any substantial increase in the birth rate which remains broadly consistent with overall mortality rate.

The increase has come from immigrants arriving from the wider Caribbean region, predominately from Jamaica and Guyana and the Spanish-speaking Dominican Republic. In 2001 immigrants accounted for just over 18 percent (820) of the population, which grew to 34 percent (1,634) of the population by 2011. Many immigrants are now assimilated and have right of residency.

The increase in a working-age migrant population has offset an aging Montserratian demographic. The working age population (15-65) rose by approximately 15 per cent between 2001 and 2006¹.

The pattern of population distribution has changed little since the last census in 2001². In broad terms the pattern is the same; concentrations of population in the north east in the new development areas of Lookout and Drummonds; some new plots in the Barzey's and Baker Hill area and gradual infill in the villages along the north south coastal corridor, taking in Cudjoe Head and St Peters. Any significant changes have largely been as a result of a phased closure of emergency shelters at Brades, Drummonds and Gerald's; a move away from shared housing in Salem and the relocation of population for airport construction in 2004. Changes in the overall pattern of population distribution since 2001 is presented in Table 2.1.

¹ In April 2012 full results of the 2011 Census were not available. This data will be updated when full results are available.

Table 2.1 2011 Population by settlement

Settlement Area	2001 Population	2006 Population	2011 Population*
Lookout	474	583	583
Judy Piece / Dick Hill	161	228	228
St John's / Mongo Hill	236	251	251
Barzey's	37	91	91
Gerald's	261	114	114
Drummonds	91	98	98
Davy Hill North	564	569	569
Davy Hill South	201	224	224
Brades	443	391	391
Cudjoe Head	112	146	146
Nixons / Banks	106	143	143
Baker Hill	252	262	262
St Peter's	353	430	430
Woodlands	163	216	216
Olveston	285	356	356
Salem East	153	189	189
Salem West	227	259	259
Friths / Fleming	246	172	172
Isles Bay / Happy Hill	55	68	68
Old Towne	64	96	96
TOTAL	4,484	4,886	4,882

* 2011 district data to be updated once full details of the 2011 census are available

2.6.2 Working Age Population and Labour Market

The current labour market structure results in the vast majority of jobs being in the public, business and services sectors. Approximately one-third of the labour force is employed by Government. Only one-quarter is employed in manufacturing, fishing and agriculture and construction or trade crafts. The majority of unskilled manual workers are non-nationals; in 2010 only 5 percent of migrant workers occupied skilled or semi-skilled positions with approximately 35 percent of migrant men working in construction and 23 percent of migrant women working as domestic helpers.

Currently, the majority of domestic students do not leave the education system with the basic academic education required for the majority of jobs in the labour market. Youth unemployment is consequently high and young and more mobile Montserratians continue to leave for the United Kingdom in pursuit of education and educational opportunities.

Strict controls on the labour market can make it difficult for non-Montserratians to access employment.

2.6.3 Vulnerable Populations, Social Safety Nets and Access to Services

Using the World Bank Atlas method, Montserrat is a middle income country and so does not fit the common criteria for poverty alleviation assistance. It is, however, eligible for overseas development assistance (ODA). In the absence of robust socioeconomic data poverty and vulnerability are not just defined by income, but by human capital, access to services and housing, employment and quality of life.

Pockets of deprivation exist around the island. Recipients of social welfare support are concentrated in Davy Hill, Hope, Drummonds and Lookout. Households living in Government supported accommodation struggle to maintain the property in which they live. In 2010 there were 69 such households living in under engineered prefabricated and “Force 10” homes at Drummonds, Sweeney’s, Davy Hill, St Peters, Hope and Friths. The post disaster housing policy which grouped vulnerable populations in single locations has accentuated patterns of deprivation and anti-social behaviour.

Over a dozen individuals, all classed as “mentally challenged” are currently housed in the remnants of communal shelters at Brades.

For those eligible, monthly social welfare payments in 2011 represented a 50% shortfall against a benchmarked shopping basket of essential goods (MYACSS 2011). Those trapped in low wage employment may be earning as little as EC\$200 a month, while supporting an entire family. Some heads of household are working multiple jobs, often within the informal economy.

The relative scarcity of cheaper or low-end rented accommodation on Montserrat is inflating the cost of average monthly rents; in some areas, leading to overcrowding. Lower cost rented accommodation, which is focused in Salem, is largely owned by absentee land lords in the United Kingdom. There is no register of private landlords and standards of maintenance are low and living conditions contrast starkly with the adjacent residential Beachettes area of Woodlands, Olveston, Old Towne and Isles Bay.

Transport poverty is significant on Montserrat, with a disproportionate impact on the young, the old and migrant populations, all of whom are less likely to have access to transport of their own. The dispersed location of services exacerbates the problem; a single shopping trip may require multiple single fixed fares. For these groups, journey planning must consider the demand responsive and un-timetabled nature of the current private taxi service. A typical wait time in peak hours (am 8-9 and pm 3-5) is approximately 15-20 minutes. Between these hours, wait times can be up to an hour. After-dark services are almost non-existent.

Problems faced by vulnerable groups are exacerbated for some migrant populations not entitled to social welfare and for whom English is not the Mother-tongue. Current development planning practices are weak in terms of mobility issues. Many public and commercial buildings lack alternatives to stairs.

2.6.4 Housing Issues

There has been considerable progress in the development of a balanced housing market in north Montserrat. Although a new Housing Bill awaits legislative approval in 2011, the Government is committed to a divestment policy that reduced state involvement in the sector and reduced the unsustainable maintenance burden of its current housing portfolio and stimulates private home ownership. The policy is also designed to bring socio-economic balance to a number of communities by releasing land in deprived communities for private sector development. In 2011 this portfolio comprised:

- the remnants of communal shelters at Brades;
- Single Family Units (single detached temporary structures), mostly on private leased lands at Drummonds, Sweeney's, St Peter's, Hope and Friths and further single family units on Government land at Davy Hill;
- Force 10 houses at Lookout;
- Prefabricated housing units at Davy Hill.

Forming the bulk of government social housing stock in 2011, these units were designed as emergency and temporary solutions to the post volcano housing shortage and cannot be considered fit for purpose, notably for their lack of hurricane proofing. In addition, as the housing market recovers in Montserrat and the market value of land increases, the cost to Government of subsidising rent on these lands represents an unsustainable drain.

The approved stock transfer policy seeks to vacate these sites by June 2012. The Government is committed to the protection of the most vulnerable and priority households will be rehoused in alternative accommodation. In 2011

accommodation became available in other government housing including warden supported accommodation at Lookout, Oriole Plaza (mental health issues) and 2 new sets of apartments constructed at Lookout. A range of Government Housing Schemes are designed to support private home ownership among lower income households. These include:

- Shared equity
- Rent to own (for social housing tenants) and
- Reduced interest mortgage loans.

Subject to outcomes of these initiatives and budgetary constraints, the Government recognises that some level of direct new build will still be required for the poorest of the poor, but quantities are as yet undefined.

2.6.5 Health

Control of vaccine preventable diseases has reduced the incidence of serious communicable illness to negligible levels but there has been a marked increase in recent years in diseases of the circulatory system and nutritional and metabolic diseases; both are functions of lifestyle and diet. Diabetes Mellitus was the leading cause of death on Montserrat in the years 2000, 2005 and 2006 among both men and women, with cardio vascular diseases predominating in all other years. During the period 2000 to 2009, Diabetes Mellitus and Hypertensive Diseases accounted for 25 per cent of all deaths. Diabetes Mellitus and all Cardiovascular diseases combined accounted for well over half of all deaths. The reported incidence of HIV and AIDS in the adult population is approximately 1 percent. This is consistent with other counties in a region that has the highest prevalence rates outside of sub-Saharan Africa. Health Services are described in Section 2.7.1

2.6.6 Education

Socio-economic status can be one of the most important determinants of a child's educational attainment. An assessment in 2010 of the education system in Montserrat concluded that while results for pupils at primary are appropriate to the pupils' ages, results at secondary are low compared to regional benchmarks and lower still compared to international standards. Boys generally, and children from low socio-economic backgrounds, are under-performing. At secondary level, attainment by pupils from the Lookout catchment is approximately half that of pupils from St Augustine's and Brades. None of the schools has the capacity to assist Spanish speakers. School infrastructure is described in Section 2.7.2.

2.7 Public and Social Services

2.7.1 Health Services

The Ministry of Health (MoH) provides primary and secondary health care services. Primary health care services are delivered through the island's four Health Clinics in Salem, St. Peter's, Cudjoe Head, and St. John's, which are open during working hours (8-4 Mon-Fri). The services offered include antenatal & postnatal clinics, child health clinic with immunization, family planning, pap smears, dressings and nutrition counselling. In addition home visits are undertaken as well as quarterly school visits including day care centres and nurseries.

The 30-bed Glendon Hospital provides medical, surgical and obstetric care. These services are augmented by the provision of basic laboratory investigations; pharmacy services; routine diagnostic imaging; basic physiotherapy; nutrition/dietetics services; outpatient clinics; accident and emergency services; ambulance services; surgical operations and biomedical maintenance. The GoM are seeking financing to modernise and upgrade the current hospital building to accommodate 38 beds.

Access to tertiary care and/or highly specialized procedures is via overseas referrals through a somewhat fragmented institutional arrangement. Referrals are made by the Chief Medical Officer (MoH) but paid and organised by the Ministry of Youth Affairs, Community Services and Sports (MYACSS).

Three doctors currently operate private medical practices; two of these are employed by government on a part-time basis in addition to visiting consultants who make infrequent visits.

There are two pharmacies in Montserrat, one government-owned facility situated on the hospital compound and one privately-owned at Brades (towards Cudjoe Head).

Long-term geriatric services are offered through four homes for senior citizens. The New Margetson Memorial and the Hill View homes, located on the hospital compound, cater for high-dependence care (bathing, feeding and toileting), while a warden supported unit at Lookout provides 50 units for the elderly. One of the emerging issues associated with this accommodation, is the propensity for family members to stay with their elderly relatives, where there is no formal facility. This is partly a function of the issue associated with "transitioning" – that is, those who need a higher level of personal attention, but are not yet ready to enter into the hospital care homes.

The MYACSS also contributes financially to the Golden Years private care home, which offers its care to the elderly with medium to low dependency levels. In addition, the MYACSS supports a “care in the community” scheme through a number of partner organisations including the Old Peoples Welfare Association (OPWA). Services include meals-on-wheels and cleaning assistance.

Dentistry services are available via a government clinic at St Johns and a private facility also in St Johns.

2.7.2 Education

Nursery Education

There are three public day-care facilities which are situated in Salem, St Johns and Lookout and cater for children 1-3 years old. There are also three public nurseries situated in Salem, Brades and Lookout catering for children aged 3-4 years and a private facility in Woodlands providing day care and nursery facilities for a similar age group.

Primary Education

The primary education sector consists of two Government-owned and operated primary schools and two assisted private schools. The Brades Government Primary School has a catchment area extending from Salem and its environs to St Johns (including Judy Piece, Davy Hill, Brades, Cudjoe Head, St Peters and part of Drummonds) and had an enrolment in 2010/11 of one hundred and sixty-six students and a staff complement of a non-teaching head and eight teachers. The other Government Primary school is located at Look Out and accommodates students from Davy Hill to Look Out including, Barzey’s area, and the remainder of Drummonds. It has an enrolment of approximately one hundred and seventy five students. As with Brades, the staff comprises one non-teaching head and eight teachers.

The two assisted private schools are the St Augustine (RC) Primary School at Woodlands, which has an enrolment of one hundred and thirty seven students and the small Lighthouse Community Academy at Brades, which has an enrolment of just twelve students.

Based on average classroom size of between 25 and 30 pupils, the current primary school infrastructure is expected to have adequate capacity to 2022.

Secondary Education

Montserrat Secondary School is located on the boundary of Hazard Zone A off the main A01 Road at Olveston. In 2010/11 the school had a head count of 362 pupils; an average of 70 children in each year group supported by 32 full- and part-time teaching staff. Constructed in 1972, the current school building is operating beyond its design capacity, with classroom overcrowding. The school does not have an assembly/activity hall, or a cafeteria, and its perimeter abuts forest of the Centre Hills, creating a porous boundary making it difficult to monitor pupils' movements outside the classroom. If population grows as projected to 2022 the site is unlikely to have sufficient capacity for rising pupil numbers.

There are concerns that the current location also presents a risk in the event of evacuation if there is a volcanic emergency. Parents driving to rescue children would be driving into the danger zone blocking traffic escaping northwards.

Tertiary Education

Although options for tertiary education compare favourably with other small island states, opportunities are relatively limited. There are currently two main providers: the Montserrat Community College (MCC) and the University of the West Indies Open Campus (OC). Both of these providers are located adjacent to the Secondary School at Salem in accommodation that was purpose-built following relocation from Plymouth.

The MCC is mandated to provide vocational and technical courses to support labour market needs. This includes courses which had previously been offered by multiple service providers such as nursing, teacher training and police training. It also provides A-level programmes, evening classes and CSEC re-examinations. The small population makes many subjects unviable, while in others people are being trained without jobs to go to. For example in 2010, six nurses graduated from the college, but in 2011 only one nurse was employed.

The current facility has spare capacity. Like other facilities, the key constraints are the lack of people (both teachers and pupils) and financial resources.

The OC provides both distance-learning programmes and local vocational courses. The intake in 2011 was approximately 100 students. Those enrolled on long distance degree programmes are all currently employed – the majority in Government. These students enjoy heavily-subsidised course fees. Of the vocational courses, the OC reports significant (and rising) demand for introductory courses in Information Technology and Languages from a highly motivated immigrant population, notably from Spanish speakers.

Although the building occupied by the OC was purpose-built on land provided under long lease by GoM, the institution has outgrown this facility. The aspiration is to have a purpose built facility in a more central location so that courses can be offered during office working hours (i.e. lunch breaks) as they used to be when the OC was in Plymouth.

2.7.3 Community Centres

The privately financed Montserrat Cultural Centre at Little Bay acts as a multi-purpose government and community resource, hosting conferences, concerts and the sitting of the Cabinet and the Legislative Assembly. There are currently dedicated local community centres at Lookout and Brades. In other areas, partially suitable buildings serve this purpose, including the unused primary school in Salem, the old school building in St Peter's and the defence force barracks in Gerald's.

There is a general lack of, and pent up demand for, community centres and associated facilities across north Montserrat, especially in Davy Hill, St John's, Drummonds and Gerald's.

2.7.4 Library Facilities

A well patronised and well stocked library is situated at Brades in the BBC complex. A mobile library provides sporadic services to local schools.

2.7.5 Sports and Recreational Facilities

Although land area is constrained in the north, there has been significant progress in post-crisis facilities. In terms of physical facilities, there are now areas for cricket at the main Little Bay oval (which is now also the focal point for athletics and some school sports) and the old Salem oval. In addition, basketball facilities exist at the Salem Primary School, Brades Primary School, and the St Augustine Primary School at Woodlands, with a practice half-court and basketball hoop at St Peter's. Netball is played at Brades and Lookout and there are tennis courts at Salem and Lookout. A football stadium is located on land that was formerly part of the Blake's Estate, which is owned and operated by FIFA. The GoM contributes to the Montserrat Football Association (which is affiliated to FIFA) and the site is available to the general public for football and, by agreement, other outdoor events. With the exception of the FIFA stadium, the limited funds available for maintenance are clearly evidenced in the deteriorating concrete courts and fragile nets of the other facilities.

There is a clear need for additional facilities. At Davy Hill residents have erected their own temporary roadside basketball hoop; at Drummonds children play cricket on the street. There is also a distinct undersupply of safe play areas for infants and young children; a playground at the Lookout School is closed at weekends. The shared use of some school facilities by the public has also created some conflict; bottles, litter and contraceptives are often found in the vicinity of sports grounds.

For an island nation, the beach is an important part of everyday life, for recreation and livelihoods. All beaches are owned by Government. The Montserrat Tourist Board provides facilities on a number of these, but the maintenance regime is poor and the condition of showers and changing areas at Little Bay and Woodlands beach are in urgent need of upgrading.

Opportunities for walking and hiking are plentiful. The Tourist Board is responsible for the provision and maintenance of a number of walking trails located in the Centre Hills and Silver Hills. The trails are seen as both an important part of the island's tourism product and as a local educational and recreational resource. There are 14 mapped trails and, although they are under management by the Tourist Board, it is the National Trust that assumes practical responsibility for trail maintenance through a subvention paid by the Board. Most of these trails suffered major damage during Hurricane Earl in 2010, with many trails washed out. The Tourist Board is working with the Trust on a programme of phased rehabilitation.

There are limited formal picnic spots on the island; Woodlands Beach and the Jack Boy Hill visitor facility offer picnic areas with restrooms. A committed local community based organisation has created a picnic area at Runaway Ghaut.

There is a general absence of open space and access to open space. Many of the trails described above are unsuitable for family recreation and require a minimum level of physical fitness and hiking ability.

Opportunities for indoor and non-sectarian recreational facilities are relatively limited. The cavernous Montserrat Cultural Centre can be adapted for multiple uses, including cinema; however, it does not capture the needs of many who envy the small "cosy" cinema experience available on nearby islands.

2.7.6 Religious Services

The church is an important part of Montserratian life. In the 2001 census, almost 80% of the population reported affiliation with one of six Christian denominations (Anglican, Methodist, Pentecostal, Roman Catholic, Seventh Day Adventist, or Church of God). There are a number of churches and places of worship on the

island, many with a supporting community hall. These are shown on Figure 2.6 and 2.7

The island's public cemetery is currently located at Salem. This is nearing capacity and consequently a site has been identified and reserved by GOM for the new public cemetery at Lookout. This will have capacity to 2018 at the present rate of public cemetery burials, but additional space will have to be identified to address the needs of a growing population. In addition, a number of churches have their own cemeteries although many of these are also nearing their full capacity. These are shown on Figures 2.6 and 2.7.

2.7.7 Security and Emergency Services

Police and Fire Services

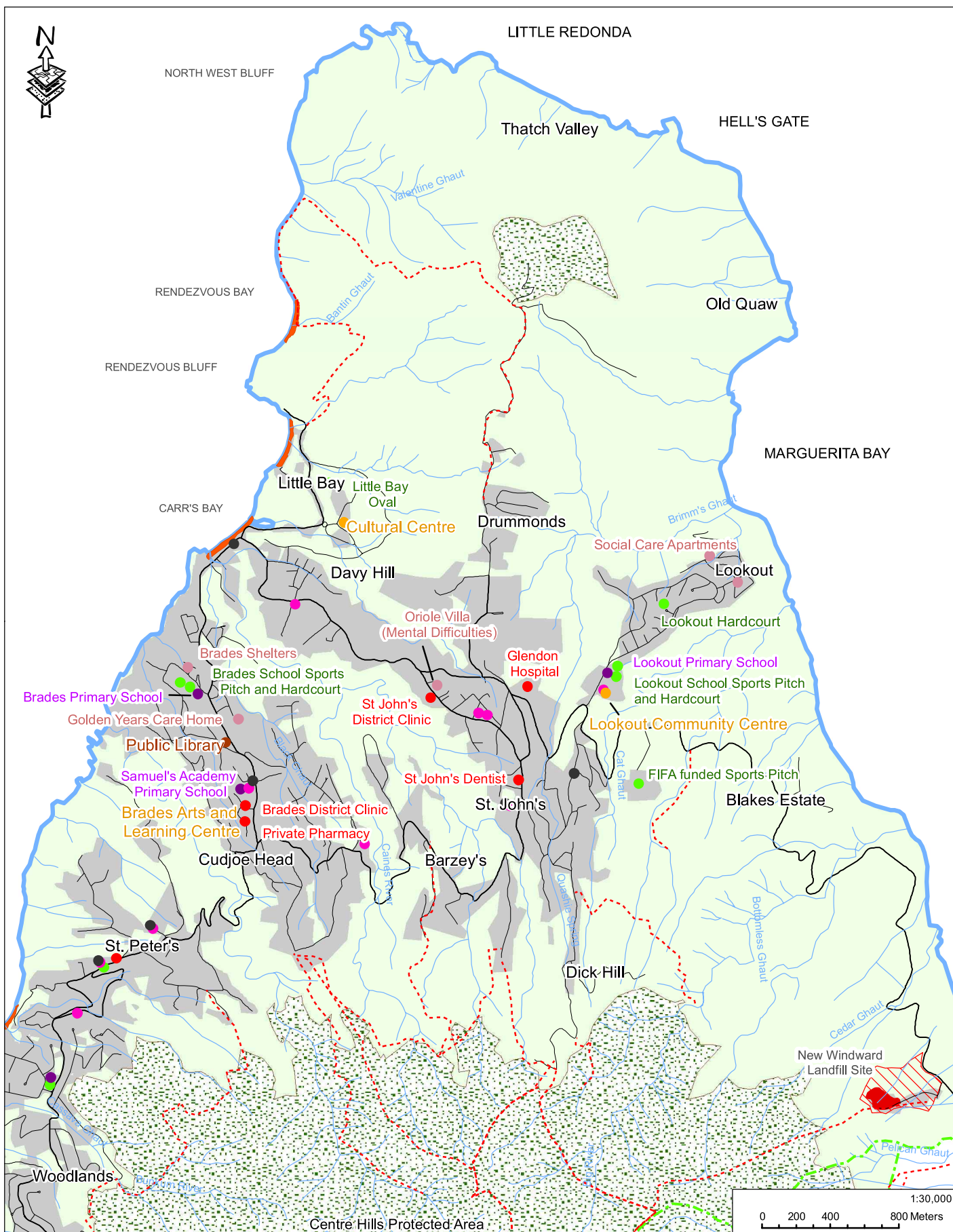
The central police and fire stations are located adjacent to government headquarters in Brades. These are well established and provide a service for the majority of the north Montserrat. There is an additional fire and police station in Salem which caters for the area south of St. Peters. The fire stations in Brades and Salem also have an ambulance on standby for emergencies. The airport has a dedicated fire station. Additional facilities are required as part of the 3-Bay Concept and will be considered while reviewing the Little Bay master plan.

Prison Service

The prison is currently located at the western end of Brades, below government headquarters and adjacent to the police and fire stations. There are approximately 30 inmates and incarceration rates are stable. The prison may have to be extended depending on future crime rates and the current site offers sufficient space to do this.

2.7.8 Emergency Shelters

There are 20 hurricane shelters located across the northern part of the island, primarily churches and education buildings. A list provided by DMCA indicates that the main shelters can accommodate between 900 and 1,000 people, but few of these "shelters" have actually been subjected to detailed structural surveys. Until their structural integrity has been confirmed these buildings should be considered only suitable for shelter in terms of accommodating post-hurricane or post-volcanic activity. It would not be appropriate to use unproven buildings post-earthquake in case they would be unsafe in the event of aftershocks.



**GOVERNMENT OF
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Legend

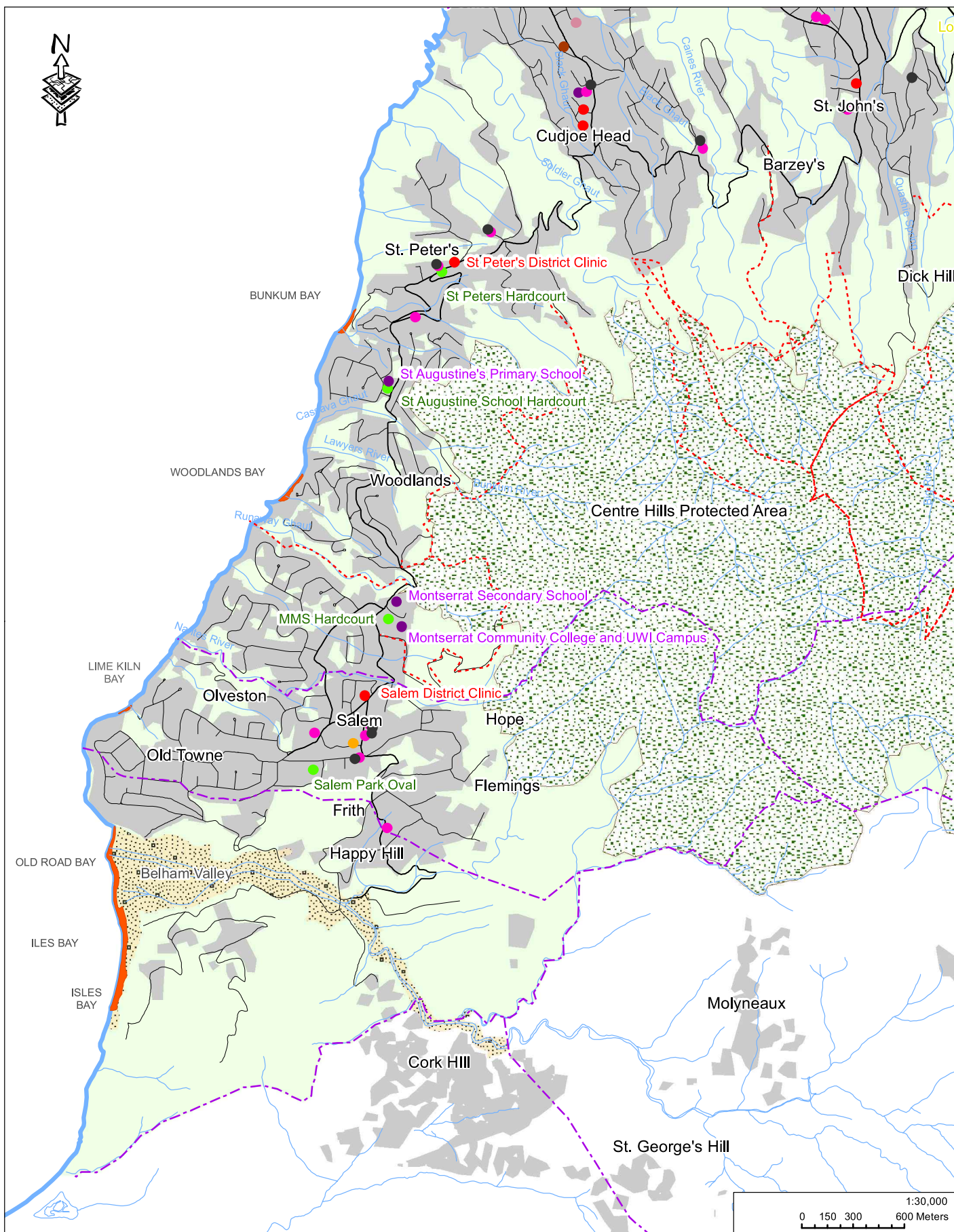
- | | | |
|------------------------|---------------------|------------------------------|
| ● Community Centres | ● Sports Facilities | ■ Swimming Beaches |
| ● Cemetery | ● Health Facilities | ■ Built-up Area (2011) |
| ● Church | --- Hiking Trails | New Windward Landfill |
| ● Education Facilities | — Rivers and Ghauts | ■ Existing Landfill |
| ● Library | — Main Roads | ■ Total Capacity |
| ● Care Facilities | — Minor Roads | |

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

**Social Infrastructure
(North of St Peter's)**

January
2012

Figure 2.6



GOVERNMENT OF MONTSERRAT

Ministry of Agriculture, Land,
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- | | | |
|------------------------|-------------------------|------------------------|
| ● Community Centres | ● Sports Facilities | Swimming Beaches |
| ● Cemetery | ● Health Facilities | Belham_Valley |
| ● Church | --- Hiking Trails | ■ Built-up Area (2011) |
| ● Education Facilities | --- Hazard Zones (2011) | |
| ● Library | — Rivers and Ghauts | |
| ● Care Facilities | — Main Roads | |
| | — Minor Roads | |

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

Social Infrastructure (2011)
(St Peter's to Isles Bay)

January
2012

Figure 2.7

2.8 Physical Infrastructure

2.8.1 Objectives of Infrastructure Provision and Management

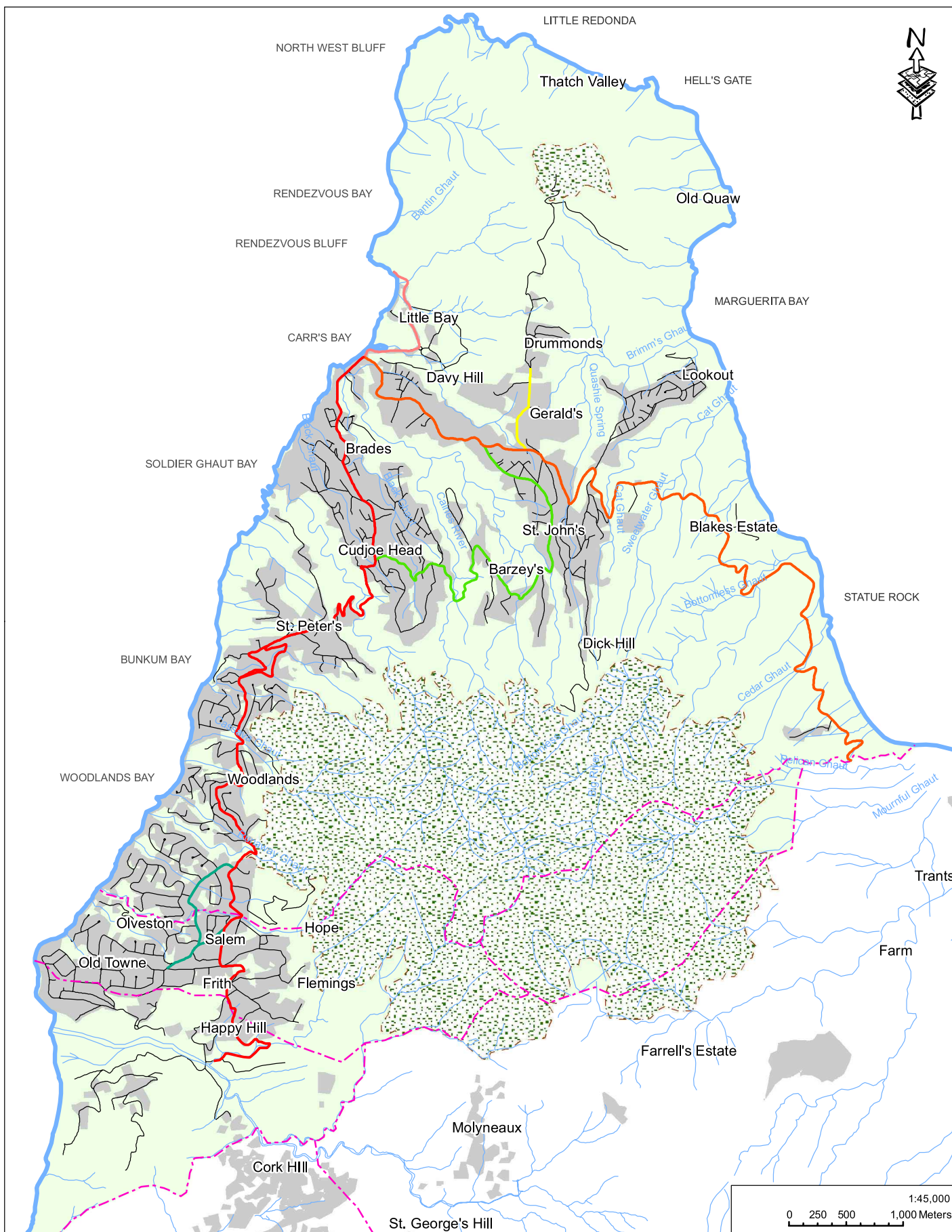
Government's Sustainable Development Plan (SDP) for the period 2008-2020 is the overarching document that outlines activities and priorities in the public and private sectors for redevelopment of Montserrat. It provides a coherent policy framework – developed and agreed by Government, the private sector, individuals and organisations – for achieving a vision by 2020 of *“a healthy and wholesome Montserrat, founded upon a thriving modern economy with a friendly, vibrant community, in which all our people through enterprise and initiative, can fulfil their hopes in a truly democratic and God-fearing society”*. The adequacy of the island's infrastructure is therefore to be assessed against its suitability in underpinning Government's attempts to realise the 2020 Vision.

2.8.2 Road Network

The vast majority of the road network is in poor condition, characterised by many years of inadequate maintenance of the pavement and highway drainage. The PWD had already designed a road reinstatement project, which commenced in late 2010 funded by the British Government (DFID). By mid-2011 a significant portion of the non-asphaltic works had been completed, including a new sidewalk between Cudjoe Head and Brades, and improvements to drainage and utility channels. The main A01 has been extensively damaged by poor weather and heavy-axle sand mining trucks. The DFID-funded project includes a conditionality for legislation to protect the roads by way of axle-load controls. Axle-loads have been brought under control since late 2011 and the asphaltic works are expected to commence in early 2012.

The network as a whole suffered extensive damage due to the flash floods and landslides during Hurricane Earl in August 2010. The intensity of storm waters in the ghauts meant that most ghauts were damaged by flash-floods. PWD recommended, and Government agreed, to develop a strategic approach for addressing the hurricane damage and to mitigate against potential future problems.

Recurrent budget limitations continue to be a major impediment to the provision of planned maintenance. Investments in the road network will not be adequately protected until a preventative maintenance regime is in place. Figure 2.8 shows the road network.



GOVERNMENT OF MONTSERRAT

Ministry of Agriculture, Land,
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- Primary Road (A01)
- Primary Road (A02)
- Primary Road (A03)
- Primary Road (A04)
- Secondary Road (B01)
- Secondary Road (B02)
- Secondary Road (B03)
- Minor Roads (C Class)
- - - Hazard Zones (2011)
- Rivers and Ghauts
- ▨ Protected Forest
- ▨ Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

Existing Road Network
(2011)

January
2012

Figure 2.8

2.8.3 Electricity

The power station at Brades replaced a temporary installation in Salem that had been provided after the old station at Plymouth had to be abandoned. The current power station houses five high-speed generators, four of which were procured as used-units. These were designed as emergency standby units or top-up at peak times. Consequently, they operate outside their design capacity and are inefficient and unreliable.

Currently, almost no power is produced from renewable resources, except for limited use of solar panels. Studies had been carried out indicating that wind turbines could provide a suitable source of electricity, but recent progress with geothermal investigations suggest that this will provide a continuous and reliable source of power, adequate to meet all projected needs of Montserrat and enough to make export to Antigua economically viable. Figure 2.9 shows the power network.

2.8.3 Water Supply

The overall supply of raw water from springs surrounding the Centre Hills is more than adequate to meet current demands. There have occasionally been some supply problems, thought to be associated with volcanic ash blocking the aquifer, but these have rectified themselves within a few months.

Water storage capacity in the north of Montserrat needs to be increased to provide a minimum of 3-day's supply in the case of natural disasters disturbing the quantity or quality of the spring supplies.

MUL has capped two wells in the Belham Valley which can be included in the collection and distribution system in the coming years in response to increased demand. However, current water consumption levels in Montserrat are much higher than elsewhere in the Caribbean, despite the low levels of tourism and associated demand for swimming pools, etc. As tourism increases, water demand management measures will become appropriate in order that the springs and wells continue to meet the needs placed on the system. Figure 2.10 shows the water network and wastewater facilities.

2.8.4 Wastewater

Most houses, offices and public buildings in Montserrat use individual septic tanks, with just the two main areas of Davy Hill and Lookout being on communal systems. Sludge from the individual tanks is collected via tanker and taken to sludge ponds near the landfill site at New Windward. These, probably for lack of budget and other resources, are not well managed, including a lack of adequate signage and fencing

to keep the public away from the edge of the ponds. They would benefit from being rehabilitated and provision of an area for sludge drying beds

The two communal systems are extended aeration units that occasionally suffer from ingress of storm water leading to overflowing. There is a risk of the overflows reaching adjacent private residential properties. This could be addressed by separating the flows and discharging into a cesspit. MUL has already included this measure in a 5-Year Development Plan that they have recently compiled. Existing communal wastewater facilities are shown in Figure 2.10.

2.8.5 Sea Port Facilities

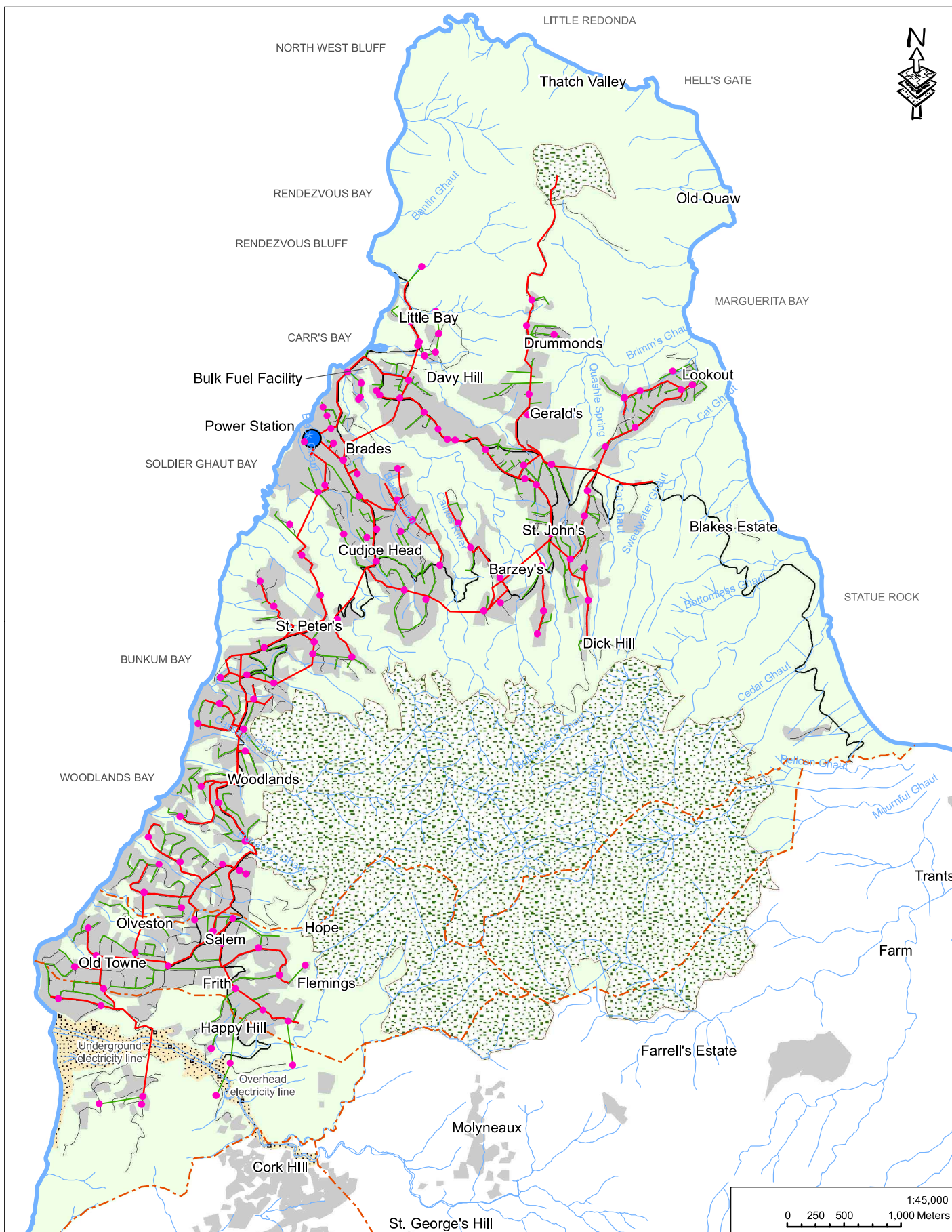
Since the volcanic activity resulted in the establishment of the Exclusion Zone, Montserrat's only operational port facilities are located at Little Bay. The current facility comprises a jetty and relatively narrow wharf that links the jetty to the warehousing and the port immigration building.

Until 2005 there was a regular ferry service operating between Little Bay and Antigua. Despite the multiple demands placed on the jetty, including ferry, fishing, cargo and recreational boating, the tourist throughput at the port reached just over 13,000 in 2004, but the ferry service was discontinued in 2005 when the new airport was opened at Gerald's. A ferry service was re-established in 2010 and a new hybrid (passenger and cargo) ferry is expected to be ordered in 2011 that will reduce travelling times to/from Antigua.

2.8.6 Air Port Facilities

Montserrat used to have substantial airport facilities at Trants, but these were buried under a pyroclastic flow in 2010. The Trants area had already been defined as being at risk from volcanic activity and contained within the Exclusion Zone.

The new airport at Gerald's currently caters to an annual throughput of between 6,000 and 7,000 passengers, although there is a considerable peak period during Christmas and New Year. The airport runway could theoretically accept a maximum of 30 flights per hour, but capacity bottlenecks are related to the inward immigration area where it takes about 5-10 minutes to process each passenger; even with 2 immigration officers the maximum throughput has been about 18 passengers per hour. For six-seater planes this corresponds to just three flights per hour. Digitisation of passport processing would increase the immigration processing capacity.



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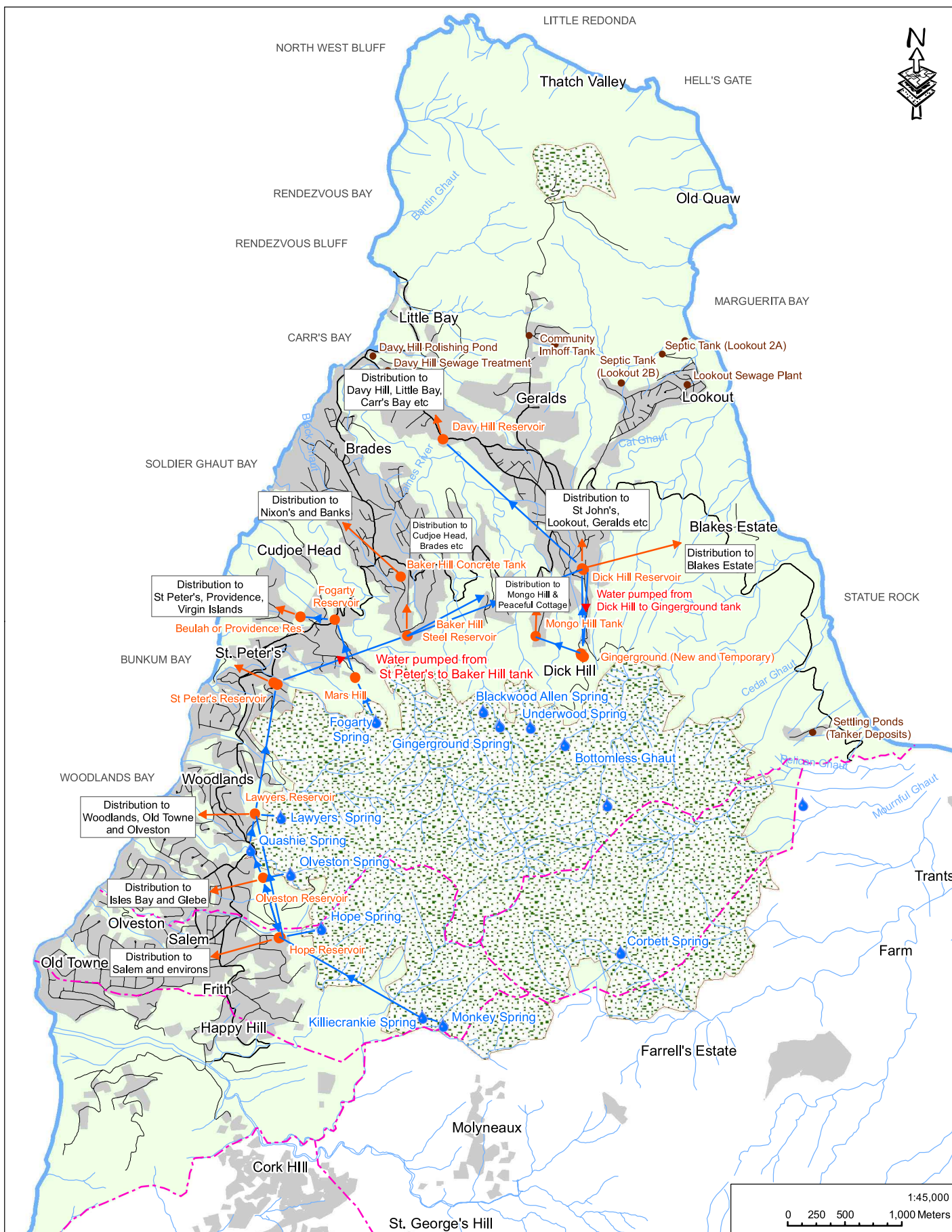
- Diesel Gen. Power Station
- Transformers
- High Voltage Power Lines
- Low Voltage Power Lines
- Main Roads
- Minor Roads
- - - Hazard Zones (2011)
- Rivers and Ghauts
- - - Protected Forest
- Belham Valley
- Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSEERRAT
2012-2022

Existing Power Network
(2011)

January
2012

Figure 2.9



**GOVERNMENT OF
MONTSERAT**

Ministry of Agriculture, Land,
Housing and the Environment

PHYSICAL PLANNING UNIT
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Legend

- Springs
- Reservoirs / Tanks
- Wastewater Facilities
- Rivers and Ghauts
- Main Roads
- Minor Roads
- Hazard Zones (2011)
- Protected Forest
- Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

Existing Water Network
(2011)

January
2012

Figure 2.10

Baggage handling is a further bottleneck, including limited facilities for screening outbound baggage, the need for better trolleys between the plane and terminal, and improved customs procedures for inbound baggage.

The departure lounge can accept about 30 passengers at any one time, which equates to about 5 flights per hour for six-seater aircraft. Screening of outbound passengers does not represent much of a problem, typically taking about a minute per passenger.

With respect to maintenance of the airport facilities, the service level requirements for all airside facilities are statutory. These must be recorded and reported to the airport regulator if/when deficient. Landside service levels are less stringent but it is of course in Montserrat's best interests to present to its residents, tourists and business travellers an image of good management and safety.

2.8.7 Government Buildings

Government Headquarters is located at Brades, with the exception of MCW which is accommodated in an old rented villa in Woodlands area. In 1997, in response to the need to provide alternative facilities to accommodate government ministries and departments, 12,850 sq. ft. of temporary office space was provided in Brades. The buildings at Brades, classified as 'temporary', began to deteriorate less than three years after completion and were subsequently upgraded.

In 2006 a detailed survey of the state and adequacy of GOM office facilities at Government Headquarters and at other locations, revealed that many of the buildings occupied, were grossly inadequate in terms of the effective and efficient functioning of government and the delivery of essential public services. Construction of four new GOM office buildings began in 2010, including a new head office for MCW at Brades. The project comprises the first of two phases to provide GOM ministries with suitable office accommodation.

It is also intended that additional Government offices will be provided in due course in the Little Bay area.

2.8.8 Bulk Fuel Storage Depot

Government owns the land upon which the bulk fuel storage facility is sited at Carr's Bay. The site has been subject to occasional flooding due either to the flooding of the river over-topping its banks (as it did during Hurricane Earl in 2010) or due to storm surges and wave action resulting in the sea overtopping the main road (which has also led to flooding of properties adjacent to the fuel depot). Fuel storage is a critical item of the island's infrastructure and needs to be better protected. The

optimum solution is to relocate the depot, possibly to the quarry site in Little Bay Ghaut.

2.8.9 Telecommunications

The current speed and reliability of landlines and the Internet is satisfactory for most business and personal uses. However, Government intends to proceed with ICT-based businesses as one of its primary economic drivers for which faster fibre-optic lines will need to be laid across the north of the island, as well as the two undersea cables linking Montserrat with Guadeloupe and St Kitts.

The mobile network is also adequate for current use, but if modern business people are to be attracted to the island then 3G and other new technologies will need to be provided as “business essentials” and part of a modern way of life for all residents.



SECTION 3

PLANNING PARAMETERS

3. Planning Parameters

3.1 Government's Sustainable Development Plan and Vision 2020

Government's Sustainable Development Plan (SDP) for the period 2008-2020 is the overarching document that outlines activities and priorities in the public and private sectors for redevelopment of Montserrat. It provides a coherent policy framework – developed and agreed by Government, the private sector, individuals and organisations – for achieving a vision by 2020 of *“a healthy and wholesome Montserrat, founded upon a thriving modern economy with a friendly, vibrant community, in which all our people through enterprise and initiative can fulfil their hopes in a truly democratic and God-fearing society”*.

The SDP describes five strategic goals for achieving Vision 2020:

1. a stable and diversified **economy** with sustained growth
2. enhanced **human development** and improved quality of life
3. **environmental sustainability** and strategies for **mitigation of disasters**
4. efficient, responsive and accountable system of **governance**
5. a sustainable **population**

More specifically, the SDP provides specific social and economic development targets, including:

- 6% annual GDP growth from 2012 onwards
- 60% of national electricity needs produced from renewable resources
- local production of 50% of annual agricultural needs
- residential population of 9,000
- tourist arrivals of 15,000 annually
- more reliable and affordable access to the island

In one way or another, land use planning impacts on each of the strategic goals and development targets. The allocation and sustainable use of land is essential for a stable and diversified economy and for improved quality of life; there is a close interrelationship between land use, the environment and the mitigation of disasters; equitable land allocation and management relies on good governance; and a sustainable population requires spaces for living, working, and recreational purposes.

The SDP has been studied to identify the **primary economic drivers** that will be central to Montserrat's economic growth and social development in the coming years. These are:

- geothermal energy
- fibre-optic links to Guadeloupe and St Kitts
- improved sea and air access

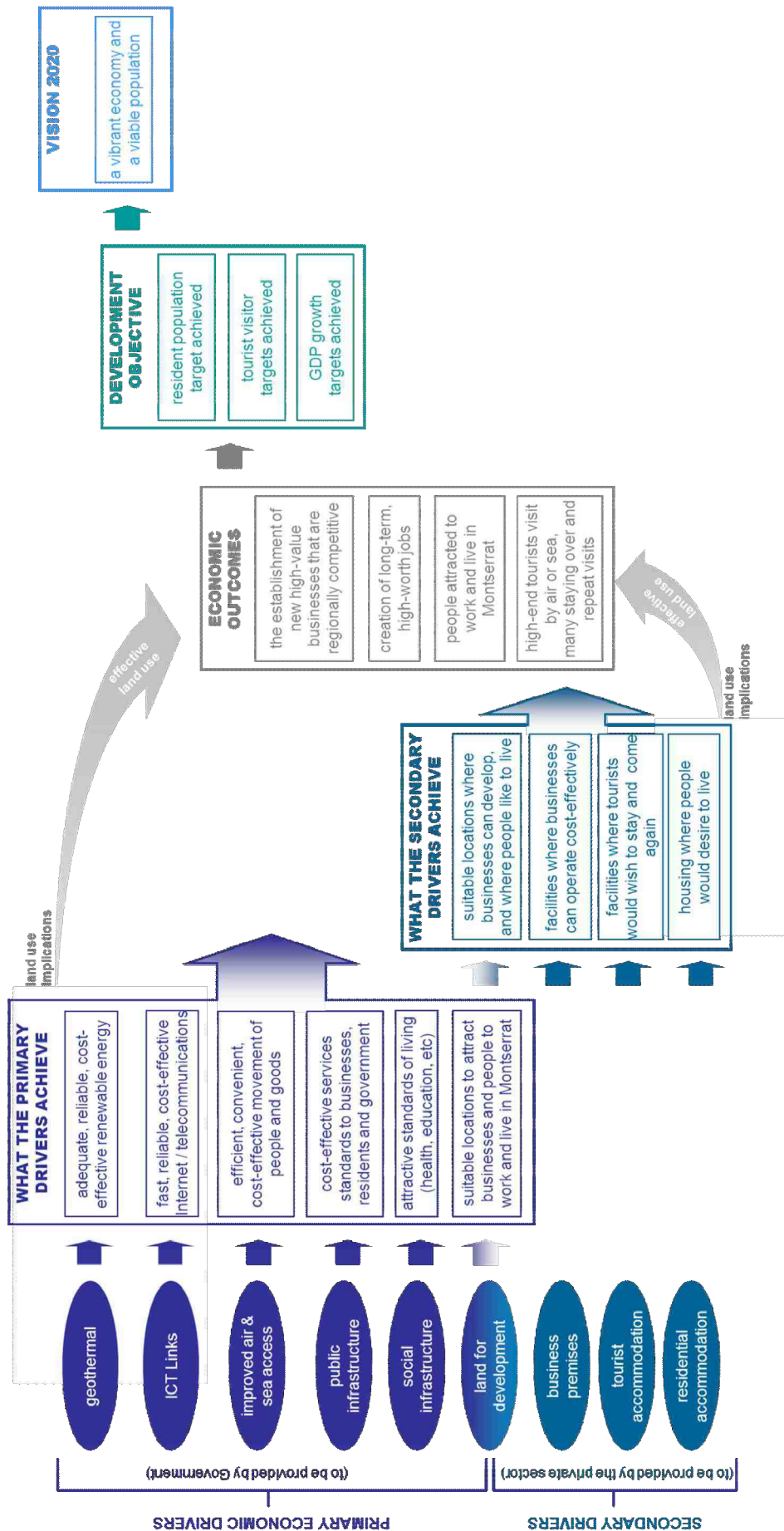
In short, convenient and affordable access will facilitate the movement of people and goods, tourism, and reliable and competitively priced Internet links and energy will make Montserrat regionally competitive.

3.2 Inter-relationship between Economic Drivers and Land Use

The provision of geothermal energy, new fibre-optic cables (to link Montserrat to the regional Internet network), and improved air and sea access are considered to be of primary importance to virtually all upcoming social and economic development activities in Montserrat. Achievement of Government's Vision 2020 will also rely on the provision of suitable public and social infrastructure, and the construction of businesses, homes and tourism facilities. All of these economic activities will require land (see Figure 3.1).

Prudent allocation and use of developable land will enable Montserrat to redevelop its economy and recreate standards of living at least as high as those seen prior to 1995. While geothermal energy operations must be located in the Hazard Zone C (where suitable fault lines are located) and sand-mining at its periphery, all other social development and economic growth activities will compete for land space within the northern part of the island. This includes commercial, industrial and tourism facilities, government buildings, social and public infrastructure, residential and recreational spaces, areas of ecological, landscape and cultural heritage significance and protected environmental areas.

Figure 3.1: The inter-relationship between social and economic development and land use

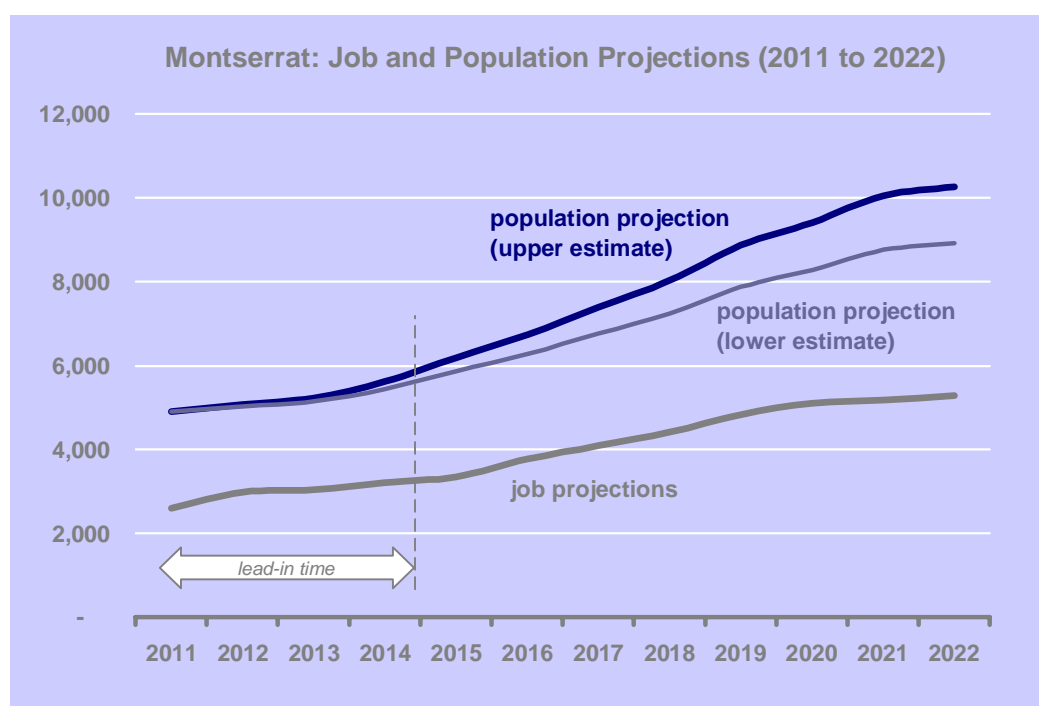


3.3 Approach to developing the PDP

Government's SDP has been taken as the starting point for considering what Montserrat might look like by 2020 and the demands that will be placed upon its land areas. In particular, the SDP targets for residential population and annual tourist numbers provide the basis from which demographic and economic projections can be made.

The current population is just under 5,000, so the SDP target implies a doubling of this figure. It has also been assumed that at least 3,000 new jobs will need to be created to sustain the target population of up to 10,000; see Figure 3.2.

Figure 3.2: Job and Population projections up to 2022



The previous PDP (2000-2009) used Government's resident population target of 10,000, but acknowledged that the pace of development could not be forecast. It considered the land requirements and development projects that would be required to support interim levels of population, in three phases:

- Phase I - 6,000 resident population
- Phase II - 8,000 resident population
- Phase III - 10,000 resident population

Some developments anticipated when producing the previous PDP (2000-2009) have not taken place, but some developments have been undertaken that were

completely unforeseen, such as the John A. Osborne Airport constructed in 2003. This updated PDP uses the same approach of phased population targets and acknowledges that, while development initiatives are somewhat clearer than ten years ago, the pace of development still cannot be accurately predicted. Despite these unknowns, this updated PDP must consider the possibility that Phase 3 *could* be attained by 2022. It must consider the land uses associated with 10,000 residents, their places of work and recreation, and the additional demands on land space for a viable tourism industry.

Sustainability considerations dictate that current decisions and actions should not compromise the quality of life of future generations. This PDP is intended to facilitate implementation of the SDP up to 2020, but it must fully consider land use needs and infrastructure provision even if the SDP targets are attained after the plan period. It is not possible to define precisely the demographic profile or nature of businesses that will characterise a future Montserrat so the PDP must include a degree of flexibility that accommodates more than one development scenario, while still providing sufficient guidance to be an effective decision-making framework for future land use and development.

People will only come to Montserrat (diaspora and/or others) if there are good jobs and they will only stay if the standards of living are also good. While the Little Bay Estate (LBE) is expected to provide about 850 jobs post-construction, it is clear that many other economic initiatives will be required to provide the overall number of jobs to sustain the target population. Consideration has been given to possible spin-off industries that could arise from provision of geothermal energy, ICT, sand-mining, and improved access, the primary tourism and commercial opportunities of the 3-Bay Concept, and the additional opportunities associated with Montserrat's fresh water supply and abundant fruit trees (e.g. water bottling and fruit-juice production), the volcano itself (as a tourist attraction), privately-owned lands (for eco- and sports-tourism, etc), and so on. There is expected to be some "lead-in" time while appropriate arrangements are made before these jobs will happen.

Land use requirements have been estimated for the plan period, based on the SDP and other relevant policy documents, as well as through the consultation process. *Section 4* sets out this process in further detail.

An evaluation was then made of potential development land in northern Montserrat, based on several parameters. These were, firstly, the assumption that land can generally be developed on slopes up to 30 degrees, although all planning applications will be considered on a case by case basis, including cases where developers apply to build on steeper slopes. Secondly, the evaluation excluded all protected and conservation areas. Thirdly, areas vulnerable to flooding and other

hazards were discounted and fourthly, areas within proximity to existing infrastructure were given priority for development. The evaluation of developable land is set out in *Section 5*.

Once the potential land available for development was identified, the process of planning and consultation was carried through to suggest a land use zoning pattern for the future development of Montserrat. Associated national and local policies were developed in order to support sustainable land use planning and the objectives of the PDP.

3.4 Principles for Regulating and Promoting Land Use and Development

Land planning refers to decisions that relate to continuation or changes of land use. These decisions affect everyday life. These decisions might relate to the location of public infrastructure (roads, utilities, etc), or social infrastructure (schools, health centres, parks, etc), residential plots, protection of water courses and environmentally sensitive areas, or the preservation of heritage sites. They may influence where people work, where they go to shop, where they have to take their children to school, or where they can build their homes.

Land planning decisions might also be associated with the permissible use of adjacent lands; this is called “zoning”. The primary purpose of zoning is to ensure compatible use of adjacent land areas, avoiding conflicts between different land users, and between land users and the natural environment (both flora and fauna). Zoning also supports sustainable and equitable development of communities, and can ensure consistency of development purposes and styles within a defined area. Zoning is of particular importance for northern Montserrat because a whole nation’s future has to be accommodated within just 16 sq miles, of which at least 4 sq miles is already a protected area (the Centre Hills). Tourism is considered a key sector of the nation’s future economy, so zoning can also help preserve Montserrat’s unique environment, its splendid vistas, and cultural heritage; all of which are vital to Montserrat’s tourism product and the Montserratian way of life.

Local Area Plans (LAPs) have been produced for each of the eight main settlement areas, as defined in *Section 7.1*. Each LAP indicates appropriate zoning and supporting land use policy based on the anticipated mix of residential, business, and other uses in these areas. The zoning and policy also makes suitable provision for social and public infrastructure, while protecting water courses and environmentally sensitive areas. Consideration has been given to ensuring local access to services and maintaining the cohesion of the community within each LAP

by allocating space for community buildings and outside events, local shopping, eateries, bars and other places of local entertainment. This is also important to ensure local access to services and facilities.

The zoning in this PDP aims to extend the local community structure to a national Montserratian level, essential for defining what is unique about Montserrat and identifying the island as a special place in the Caribbean. The zoning at national level therefore considers the branding of Montserrat and how this should be reflected in its tourism product including the 'three-bay concept' for Carr's Bay, Little Bay and Rendezvous Bay and the standard of hotel and associated facilities in Little Bay. It also considers the type and location of sports tourism facilities, residential accommodation, businesses, and protection of everything that is unique to Montserrat's environment and its people's way of life.

The zoned designation of land for certain uses or purposes is regulated through **the planning process**. Each development, from the addition to an existing residential dwelling to the development of a hotel or retail outlet, is evaluated by the Planning and Development Authority (PDA) with committee members representing the public and private sectors. This committee grants permission or refuses it on the basis of how the plans conform to the land use zoning, planning policy and the Development Standards (*Appendix A*) of the Physical Development Plan. The proposed development is then assessed at the detailed design level. Plans are assessed by the relevant government departments to ensure that building codes, environmental impact, sanitation and fire safety have all been appropriately considered. *Appendix A* sets out the planning application process in flow chart form. The PDP is a land use and infrastructure planning framework to guide the sustainable development of the island. Where possible it is encouraged that land owners lease or sell land to potential developers or the government to contribute to the development process.

Land acquisition is considered a last resort for the government to acquire land if the need is critical to the development of Montserrat. The land acquisition process is set out in *Appendix A*.

3.5 Allocating Land for Infrastructure

Sustainability considerations dictate that current decisions and actions should not compromise the quality of life of future generations. But uncertainties regarding the future size and locations of resident population, tourist facilities and businesses mean that future demand on land cannot be accurately predicted. Equally, the size and location of infrastructure cannot be fully determined at this time. However,

critical infrastructure must be protected from the potential effects of natural disasters and climate change, and careful consideration must be given to the location of these items. This PDP aims to provide sufficient flexibility in land use planning to accommodate more than one development scenario, while still providing sufficient guidance to be an effective decision-making framework.

3.6 Principles for the Management of Environmental and Cultural Heritage

As signatories of the OECS *St. George's Declaration of Principles for Environmental Sustainability* and the *Montserrat UK Overseas Territories Environment Charter (UKOTEC)* Montserrat is committed to effective and sustainable management of its natural environment and built and cultural heritage. A number of multilateral conventions have also been extended to Montserrat. These commitments are enshrined in the goals and targets of the *National Environmental Management Strategy (NEMS)* and the SDP 2010-2020 and guide the Physical Development Plan. The land use strategy will, therefore:

- **Protect** and conserve biodiversity and other natural resources
- Protect and **conserve** historical sites, artefacts and cultural heritage and
- **Prevent and control** pollution and manage waste

The strategy recognises that significant environmental resources lie outside existing protected areas; finding management solutions that do not veto new development and enforcing existing policy, law and regulations will be critical for Montserrat's development. Environmental resources should also be enjoyed and the strategy will seek to provide opportunities for people to come into contact with and appreciate Montserrat's wildlife and wild places.

A renewed focus on Montserrat's history has led to a plethora of important finds. The Strategy recognises that it will not be possible to conserve all these areas, but priorities will have to be agreed and all areas recorded and appropriate artefacts taken to the museum. In addition, modern social history will play an important part in retaining and enhancing Montserrat's sense of self and national identity, the context often as important as the site itself.

Key risk factors require specific measures. The Strategy will also seek to:

- **Reduce** the effects of invasive species, including feral and loose livestock
- **Minimise** potential for contamination of protected water catchments and springs, and safeguard soil quality and quantity.

3.7 Disaster Risk Reduction

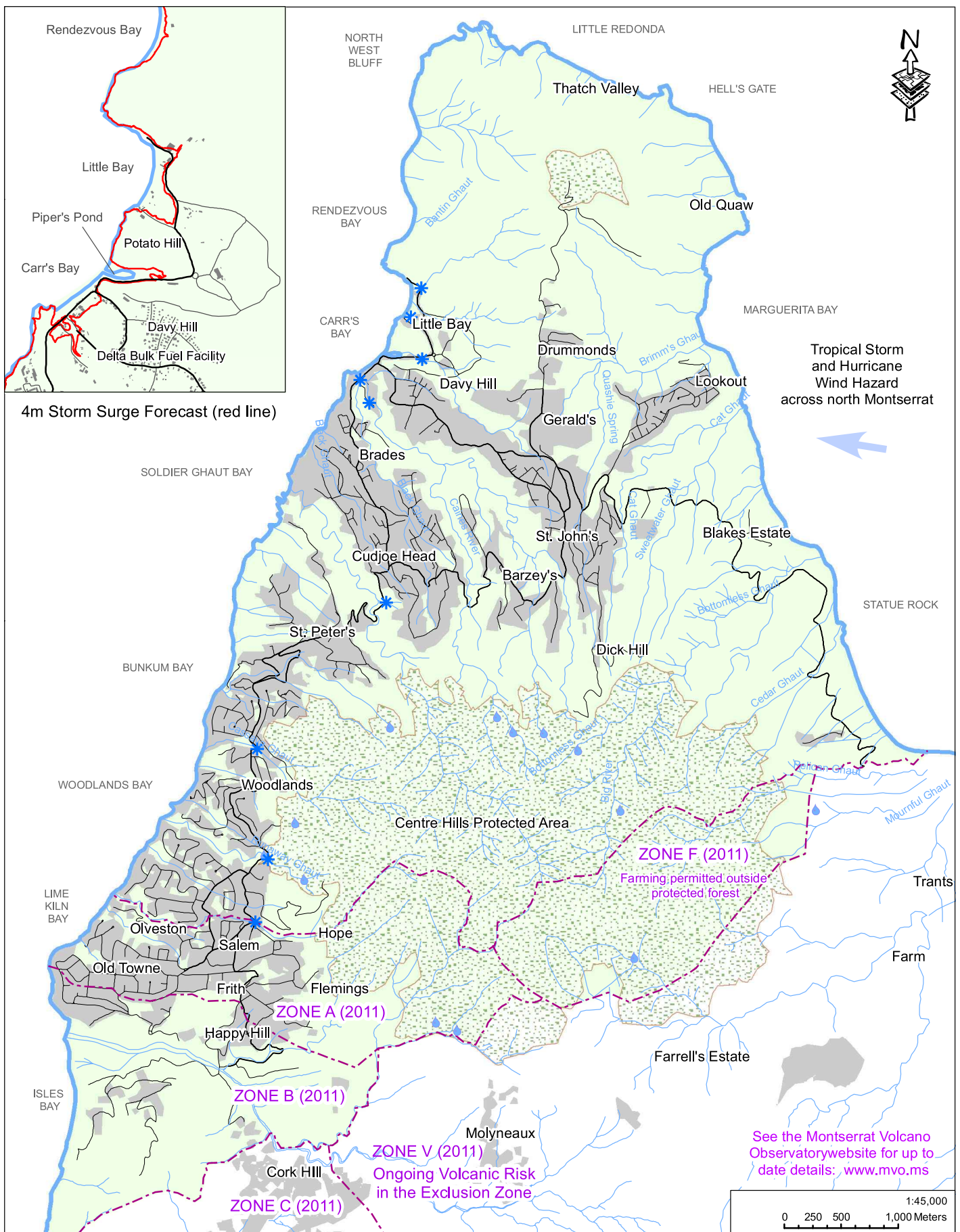
Figure 3.3 presents a hazard risk map for Montserrat. Aside from the risks associated with volcanic and seismic activity, inland flooding and storm surge arising from extreme weather events represent the greatest threat to developments on the island.

The land use strategy will therefore:

- **Adopt** a precautionary and risk based approach to flood risk, taking into account the susceptibility of low lying areas with high water table; the effects of wave action (including storm surge and tsunami) and inland flooding;
- **Recognise** the important role of ghauts in successful water and land management;
- **Minimise** the potential for increases in surface water run-off and sediment deposition in ghauts and the marine environment;
- **Ensure** emergency access and access to emergency medical support is factored into the location of critical infrastructure and a decentralised approach is adopted to the location of government and emergency services;
- **Minimise** the effects of polluting land uses on people and other sensitive receptors.
- **Encourage** the location of utility services infrastructure underground as appropriate and feasible.

3.8 Climate Change Adaptation

Montserrat's vulnerability to risks from natural disasters is expected to be compounded by climate change impacts. Changes of the magnitude projected by the Intergovernmental Panel on Climate Change (IPCC) for the current century could have significant impacts on Montserrat. Land use planning decisions made now will have an impact on climatic events not forecast to happen for the next few decades. Although there is a degree of uncertainty over the magnitude of impact, Montserrat needs to plan for: potential increases in the frequency and intensity of hurricane and tropical storms; a warming trend which could see temperatures increase by between 2°C and 2.5°C above pre-industrial levels and sea-level rise of between 1 and 2 metres above present levels.



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Legend

- Main Roads
- Minor Roads
- - - Hazard Zones (2011)
- Rivers and Ghaunts
- Spring
- ★ Prone to inland flooding
- Protected Forest
- Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Vulnerability to Disaster
(2011)

January
2012

Figure 3.3

As an economically vulnerable small island state, many climate change adaptation strategies have already been mainstreamed in Montserrat's national policy and plans and articulated in the objectives and land use strategy of the PDP. However, the strategy will specifically seek to:

- Protect and safeguard **water supply**
- Protect and safeguard **agriculture Land**
- Protect and safeguard **critical infrastructure**
- adopt an **ecosystems** based approach to Climate Change Adaptation
- adopt a **precautionary approach** to the location of infrastructure in vulnerable areas;
- Promote the use of **natural mitigation measures**, including soft engineering as appropriate;
- **promote energy efficiency** and supporting the provisions of the Montserrat Energy Policy 2008 – 2027 and a move towards a low carbon economy.

3.9 Social Inclusion

There have been profound and rapid changes in the socio economic and socio cultural make up of Montserrat since the first eruption of the Soufriere Hills Volcano in 1995. Necessarily urgent decisions taken in the immediate aftermath of the evacuation of the south have had far reaching and sometimes unintended consequences. In some cases and in certain population groups this has created a new vulnerability, while in others it has placed a greater onus on the protection of the most vulnerable members of society and highlighted the need now, more than ever, to plan carefully for a vibrant and inclusive Montserrat.

In post volcano Montserrat, small pockets of deprivation have emerged and there is a pressing need to support these communities and implement measures that ensure that future development is characterised by a balanced socio economic mix. There are significant obstacles. The Government does not own land in the north and expensive lease arrangements for social housing are unsustainable. The Government is, however, committed to ensuring the permanent resettlement of Montserratians displaced by volcanic activity and facilitating the provision of adequate housing for all priority vulnerable groups. This includes recipients of welfare, those in Government housing or in need of housing assistance, jobless families, single-parent headed households, the mentally and physically disabled and the elderly.

Children and migrant residents represent two other vulnerable groups. The demographic composition of Montserrat is changing. Immigrants from the wider Caribbean region and beyond have contributed greatly to the economic recovery and are now an important part of the fabric of society, bringing with them a new cultural dynamic. In-migration is beginning to change the age profile of Montserrat, with more young people and children.

The PDP cannot guarantee housing for all, but it can ensure that spatial plans reflect current and future national policies for health, education, welfare and housing. It can allocate suitable space for clinics, outdoor space, a new secondary school and it can ensure that ambitious plans for development respect the rights and needs of all Montserratians, including maintaining the important link to the sea and ocean. Traditional livelihoods such as agriculture and fishing are important. Not just for employment, but for Montserrat's sense of self and national identity.

The Strategy will, therefore:

- **Adopt an inclusive approach to spatial planning** which integrates communities and ensures a balanced socio-economic mix within and between developments. Social housing will be more evenly distributed around the island.
- **Encourage proactive investment in communities**, including those south of the Nantes River, to ensure vibrant and well maintained local areas with equal access for all to services;
- **Promote Healthy Living** by encouraging physical exercise and supporting the development of domestic agriculture;
- **Reduces the Need to Travel** and minimises the effects of non-car ownership and transport poverty;
- **Minimises Conflicting Land Uses** and
- **Recognises the Changing Cultural Demographic of Montserrat.**

SECTION 4

SUMMARY OF LAND USE REQUIREMENTS



4. Summary of Land Use Requirements

4.1 Introduction

As a significant part of the PDP update process the definite and likely requirements for land use during the plan period have been estimated. These are land requirements additional to existing land use. Requirements are based on the following sources:

- The policy direction provided by the SDP 2008-2020 and other relevant GOM policy documents. A full reference list can be found in Appendix I.
- The projections for economic growth as outlined in Section 3.
- Detailed stakeholder consultation, which has informed the projections for economic growth as well as the list of requirements for specific land use and infrastructure developments.

Consultation was held with representatives from all relevant government departments, special interest groups and non-government organisations. Focus groups were held to discuss a number of issues including but not limited to:

- Agricultural concerns and future requirements
- Opportunities and constraints to commercial development
- Youth concerns

Community meetings have also been held for all the main settlement areas to allow residents to voice their concern about issues on land use and infrastructure and to make suggestions for improvements and future development. Concerns and suggestions were incorporated into the PDP as far as possible and have been considered more fully in *Section 7 – Local Area Plans*. A full explanation and record of the consultation process and a list of consultees are available in *Appendices E and F*.

The resulting estimation of additional land use requirements shows that in order to support a population of 10,000 while providing appropriate facilities, a total land area of approximately **600 acres to 900 acres** is required in addition to existing developed and agricultural land.

This total excludes land needed for main roads and other infrastructure requirements such as electricity sub-stations, pumping stations, water tanks and reservoirs and sewage treatment plant.

4.2 Summary of Significant Land Use Requirements

Table 4.1 summarises the significant land use requirements, additional to those already existing, anticipated during the plan period 2012-2022.

Table 4.1 Summary of significant land use requirements for 2012 - 2022

Land use	Details	Min. Area Required (acres)	Max. Area Required (acres)
Residential housing		280	350
High density (10-15 units /acre)	Estimating that 40% of new housing stock will be high density	70	80
Medium density (5-10 units /acre)	Estimating that 50% of new housing stock will be medium density	140	180
Low density (2-4 units /acre)	Estimating that 10% of new housing stock will be low density	70	90
Social Housing	69 units needed to replace existing wooded family units 24 units needed for single persons (homeless or in Brades shelters) Ongoing demand led requirement for units	<i>Included in residential housing figures above</i>	
Government facilities		6	15
Proposed and future government office buildings	Including proposed MAHLE HQ, PWD HQ, Social Security building and Financial Services Commission	6	15
Commercial		12	32
Private offices		5	15
Private offices focused on ITC enterprise		2	4
General retail		4	8
Specialist retail		1	5
Education Facilities		8	15
Montserrat Secondary School (MSS)	expanded site or potential new site	8	15
Health Facilities		2	5.5
Clinic at Lookout with nurse accommodation		0.2	0.5
Clinic at Little Bay with nurse accommodation	To be developed as part of Little Bay developments	0.2	0.5
Fire and Ambulance station at Little Bay	To be developed as part of Little Bay developments	0.25	0.5
Residential care home for the		1	4

Land use	Details	Min. Area Required (acres)	Max. Area Required (acres)
elderly			
Community Facilities		7	40
Public Park	SDP objective	3	10
St John's Community Centre	Committed project - BNTF funded	0.25	1
Davy Hill Community Centre	Committed project - Location to be defined BNTF funded	0.25	1
Drummonds / Gerald's Community Centre	Location identified	0.25	1
St Peter's Community centre	Location to be defined	0.25	1
Fisheries complex		1	2
Emergency shelters	DMCA to define needs	2	4
Sports Facilities		83.5	105.5
Davy Hill multi-purpose courts		0.25	0.25
St Peter's multi-purpose recreation area		2	3
Gerald's recreation area		0.2	0.3
Lookout recreation area		1	2
Golf Course	SDP objective	80	100
Religious		6	8
Public Cemetery	Land committed at Lookout Second Public Cemetery needed after 2018	2.5 3	3 4
Interdenominational Church / Cathedral		0.5	1
Infrastructure		157	222.5
Geothermal powerhouse	Likely construction 2012-2015	1	5
Wastewater plant	Several units	0.5	1
Airport parking		0.5	1.5
Future Airport site	Safeguarding land for potential future development beyond this plan period	150	200
Wind energy sites	Required if geothermal fails	5	15
Tourism Development		7	16.6
Hotel	Flagship hotel as part of Little Bay development	3	5
Additional Eco-Lodge(es)	Fringes of Centre Hills forest	2	8
Tourist information services	Part of Little Bay development	0.25	0.5
Little Bay Taxi / Mini-bus rank		0.4	1
Expanded port area		1	1.5

Land use	Details	Min. Area Required (acres)	Max. Area Required (acres)
Sea rescue / coastguard		0.2	0.3
Yachting club	Potentially at Carr's Bay	0.2	0.3
Agriculture		20	80
Additional plots for Department of Agriculture to sub-lease	20 acres needed for immediate needs (2011)	20	80
Industry		18	48
Sand mining	Subject to GOM decision on land use in Belham valley	6	20
Water bottling	Planning permission granted for land parcel in Salem	4	8
General industrial land use zoned areas to accommodate future industry and storage <ul style="list-style-type: none"> • Agro-processing plant - (Cashew nuts, fruit products and preserves, bay leaves, etc.) • Value-added sand based products. 	To rear of Little Bay port, Brades, Providence, Salem etc	8	20
Other		0.5	1
Abattoir	Design underway (MAHLE) Location in Shinnlands	0.5	1
TOTAL Land Requirements		607 acres	905 acres

SECTION 5

LAND AVAILABLE FOR DEVELOPMENT



5. Land Available for Development

5.1 Introduction

Section 3 explained that if Montserrat's primary economic drivers are implemented and the resulting economic development opportunities are realised, there will be corresponding population growth. Estimates based on economic growth forecasts suggest that Montserrat's population will almost double from 4,800 today to approximately 10,000 by 2022. *Appendix C* sets out forecast population growth for Montserrat with a breakdown by communities. This is based on economic growth projections, existing and likely housing density, land available for development and the type of land use zoning proposed for each area.

As shown in the previous section, the resulting need for housing, community facilities, commercial space and retail, industrial activities and so on come to an total range of between approximately 600 and 900 acres. North Montserrat's total land area (including Hazard Zones A, B and F) is approximately 9,980 acres, of which approximately 2,500 are protected forest.

This section will evaluate which remaining areas in north Montserrat are suitable for development. The aim is to understand what quantity of land is available for development, where it is and what it can and can't be used for. Proposed and committed developments are first taken into account. The analysis then takes into account topography, environmental aspects, disaster risk, and man-made constraints such as the airport. It also takes into account the proximity to existing infrastructure as a realistic constraint to future development.

The analysis shows that there is considerable potential for consolidating existing settlements and also that several significant development areas exist.

5.2 Committed and Proposed Developments

A number of developments are currently proposed or underway in north Montserrat. The most significant proposed development is the creation of a new settlement at Little Bay. This would form the economic, commercial, cultural and residential centre of north Montserrat as well as being a seat of Government and a focal point for society. The development would include a breakwater and upgraded port facilities which are considered a primary economic driver for the island. A number of additional developments are summarised below:

Housing

There are currently two government organised housing projects in north Montserrat

- A 2.5 acre development at Davy Hill comprising approximately 20 lots for affordable housing.
- A 4 acre development in eastern Lookout for approximately 10 high-end housing lots.

Nine privately built medium density housing units are committed on the south eastern fringe of Lookout. Several areas of land have been subdivided for residential development, particularly in Barzey's. A small number of individual residential plots are also being developed across the island, particularly in the areas of Woodlands and Olveston, through the infilling of existing residential areas.

Government, Society and Community

There is a general intention that over the next decade the government offices will be divided between Brades and Little Bay. Some government departments are already planning to move. Notable committed (C) and proposed (P) projects are:

- The Office of the Chief Minister, Brades (C)
- Building Two of the Government Headquarters, Brades (C)
- The Social Security Building, Little Bay (C)
- The Ministry of Communications and Works (MCW) new Headquarters at Brades (C)
- The Ministry of Agriculture, Housing, Land and the Environment (MAHLE) new Headquarters on existing site at Brades (C)
- Montserrat Media Corporation (MMC) building at Little Bay / Davy Hill (C)
- Redevelopment of Glendon Hospital at St Johns (C)
- Davy Hill Community Centre and multipurpose hard court (C)
- Lookout Primary School refurbishment including a hurricane proof multi-purpose hall (C)
- Salem Park refurbishments (C)
- Public cemetery at eastern end of Lookout (C)
- Rehabilitation of Carr's Bay Gun Battery (C)
- Lookout landscaping plan (C)
- St John's Community Centre and multipurpose hard court (P)
- Financial Services Commission building, Little Bay is in the design stage (P)
- Girl Guides centre and accommodation at Lookout (P)

It should be noted that the completion of many of the proposed developments is dependent on securing sufficient funding.

Agriculture

There are a number of sites close to Barzey's and the Underwood Estate that have been discussed within the Department of Agriculture as potential areas for government owned agricultural land. However, these remain ideas only at this stage and no formal application for the purchase or lease of land has been made.

Tourism

Tourism is seen as a primary economic driver for Montserrat's development and the following projects are committed:

- National Museum and Archives at Little Bay (completion date of 2012)
- Montserrat Volcano Interpretation Centre at Little Bay (completion date of 2012)

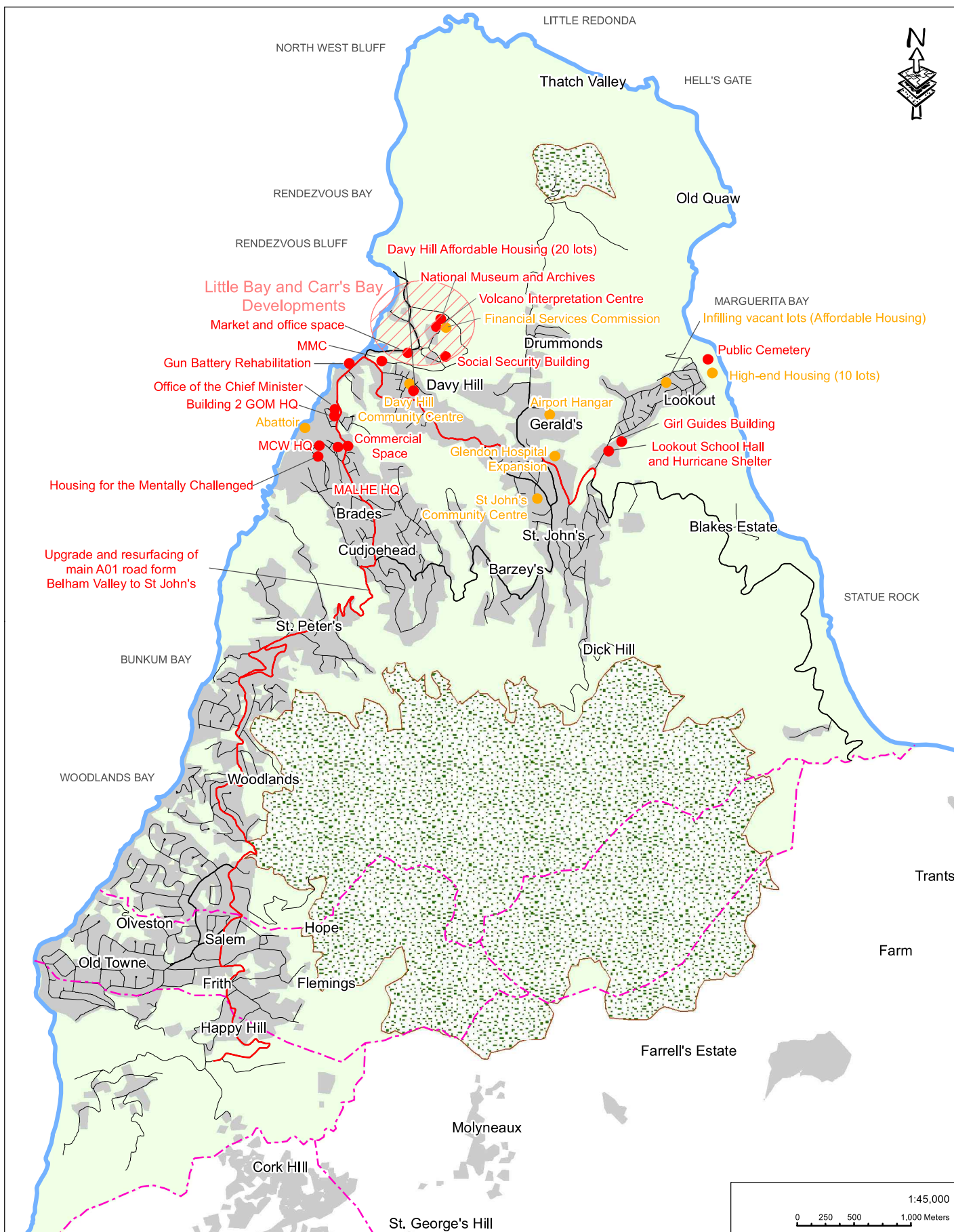
There are Tourism Board plans, in partnership with the National Trust (NT), to restore several archaeological and cultural sites. The botanical garden at the NT office in Woodlands is also undergoing some improvement along with the development of a small scale Amerindian Garden at the same location.

Commercial

Several notable projects have been completed in 2011 but at present there are very few specific notable developments underway. However, the strategic developments at Little Bay and Carr's Bay will offer significant opportunities in this area throughout the PDP 2012-2022 period/

Industrial

Sand mining is a significant concern. Studies have been undertaken to provide GOM with recommendations on the development of this industry with particular attention given to a point from which sand can be exported. As at January 2012 no definite projects are proposed.



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Legend

- Committed Developments
- Proposed Developments
- Hazard Zones (2011)
- Main Roads
- Minor Roads
- Protected Forest
- Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

Committed and Proposed
Public Developments
(2011)

January
2012

Figure 5.1

5.3 Protecting Montserrat's Environment and Cultural Heritage

Maintaining the integrity and effectively managing Montserrat's existing protected areas is important for: livelihoods, disaster risk reduction, climate change adaptation and conservation.

The Centre Hills are protected by multiple pieces of legislation that recognise the importance of its water catchments, its bio-diversity value and its role as a buffer during hurricanes and extreme weather events. The protected area is impacted by adjacent land-use, where feasible a discretionary buffer zone should be employed.

The 75 acres of **protected forest at the Silver Hills** are surrounded by approximately 1,600 acres of scenic landscape of archaeological importance. Geologically the oldest part of Montserrat, the coastal cliffs also support breeding populations of internationally important sea birds. Development of this area could achieve a balance between conservation and non-invasive development, recognising the cultural significance of the land for North Montserratians. The Silver Hills also provide access to Montserrat's only white sand beach at Rendezvous Bay.

Occupying a predominant location at the mouth of the Sweeney's River, **Pipers Pond** and the adjacent bank of Potato Hill represent a combined protected area of 0.8 ha. Strategically located between proposed developments at Little Bay and Carr's Bay, the rehabilitation of this mangrove swamp provides an exciting opportunity to balance conservation with development.

Development in and around **ghauts** must be restricted, both for their conservation value and to protect upstream and downstream lands, roads and properties from the effects of flash floods (such as happened during Hurricane Earl in 2010). These riparian strips are also a valuable and integral component of Montserrat's unique landscape, supporting Montserrat's image as the "Emerald Isle" of the Caribbean.

The management and protection of areas of environmental and cultural importance that lie outside protected areas will rely on the enforcement of planning guidelines and controls. At a minimum, the planning guidelines in the *Development Standards*, Section 8 of this strategy, should be incorporated into all development contracts.

These guidelines include management measures for habitat areas of a range of range restricted species including the endemic and highly endangered plant species *Rondeletia Buxifolia* (Montserrat Pribby) and *Epidendrum Montserratense* (Montserrat Orchid) and the illusive lizard the Montserrat Galliwasp.

The adverse impacts of increased beachfront development on the nesting turtle populations using Montserrat's mainland beaches must be considered in addition to the potential adverse impacts of turtle harvest; this includes preservation of vegetation above the high water mark and restricting land uses that may attract vermin to beaches. Every effort will be made to protect the remaining turtle nesting habitat in Montserrat. Planning guidelines will minimise light pollution and noise during critical nesting seasons.

Montserrat has a unique cultural heritage stemming from the *Saladoid-Barrancoid* group in the 4th century, followed by the *Arawaks* in the 9th century, *Caribs* in the 13th century, and European settlers (particularly Irish) in the 17th century. Considerable unique remains have been discovered across north Montserrat. In addition the North of Montserrat contains many fine examples of vernacular architecture and buildings of historic note which provide important reference points for future development. Heritage structures and archaeological sites will be factored into land-use zoning.

5.4 Disaster Risk Reduction and Climate Change

Four key risk factors can be identified for Montserrat and these have been factored into spatial planning considerations and the evaluation of developable land:

- The on-going activity of the Soufrière Hills Volcano which has implications for the location of strategic infrastructure;
- The susceptibility of low lying areas at Little Bay and Carr's Bay to the twin threats of inland and coastal flooding and storm surge;
- The susceptibility of infrastructure adjacent to, or traversing ghauts that radiate from the Centre and Silver Hills; and
- The proximity of potentially polluting land-uses to population.

Other disaster risk management considerations will be managed through the enforcement of planning regulations and the effective maintenance of infrastructure.

5.5 Additional Constraints to Development

As well as the parameters set by Montserrat's topography, biophysical environment and through reducing vulnerability to disaster, the airport is an additional development constraint.

The Existing John A. Osborne Airport

The John A. Osborne airport has some strict obstacle controls which restrict the height of any type of structure around the site. Constraints to development around the airport are set out in several standards:

- 1. International Civil Aviation Organisation (ICAO) Annex 14 to the convention on Civil Aviation: Volume 1 – Aerodrome Design and Operations**

Design guidelines which set out restrictions for obstacles around aerodromes.

- 2. Overseas Territories Aviation Requirements (OTARs): Part 139 - Certification of Aerodromes**

Design guidelines which set out restrictions for obstacles around aerodromes.

- 3. Civil Aviation Publication (CAP) 168, published by the UK CAA, for licensed aerodromes**

Physical obstacles to aviation are addressed and the publication details a series of progressive three dimensional surfaces emanating from aerodromes.

These standards must be referred to in order to understand what development is permitted within the airport 'surfaces' as illustrated in Figure 5.2. Development constraints are also set out in the ***Aeronautical Safeguarding Charts*** for John A Osborne Airport (to be prepared by 2013).

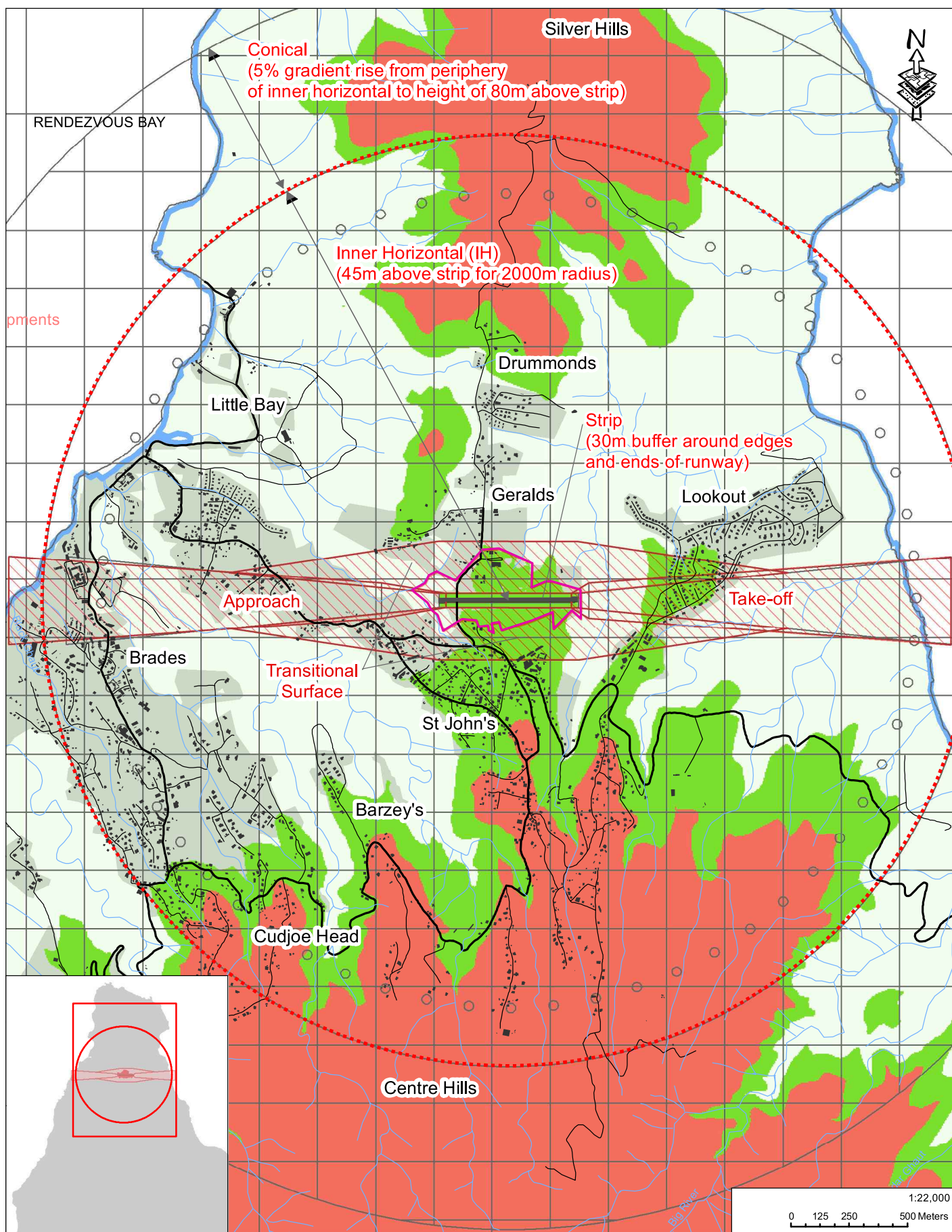
Any development proposals that occur within the Approach, Take-Off and Transitional Surfaces, as indicated in Figure 5.2, must be reviewed by the Airport Authority. The details of any successful development proposals that occur within the Inner Horizontal Surface (between the strip elevation and 45m above the strip) are to be passed on to the Airport Authority on a quarterly basis for obstacle survey records.

Safeguarding land for a new airport

Land is to be safeguarded for the only other potential airport site(*) north of the Exclusion Zone capable of accommodating a runway length that would allow wider-regional aircraft to operate from Montserrat. The area to be safeguarded is at the Thatch Valley / Old Quaw area which covers approximately 200 acres. Although development of an airport at this site is unlikely within the plan period, this area is to

be safeguarded as pastureland with a presumption against other types of development.

(*) Note: Gerald's airport has not yet been excluded in terms of the possibility of lengthening its runway to accept aircraft of a greater range. A feasibility study would be required to compare the technical, social, environmental and economic feasibility of the site options.



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Runway	Elevation
Airport Boundary	0 - 165.99m
Rivers and Ghauts	166 - 211m (Strip Elevation to 45m above Strip)
Main Roads	211.01 - 1,007.3 m (Elevation above IH)
Minor Roads	Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Development Constraints
due to the John A.
Osborne airport

January
2012

Figure 5.2

5.6 Land Available for Development

Taking into account all of the above factors and considerations, an analysis has been carried out to understand which land areas are suitable for development. The results are illustrated in Figure 5.3.

The analysis of existing land use shows that there is high potential for infilling and consolidation of the existing settlement areas. Estimates have been made for the likely developable land in each area and these are shown in Table 5.1

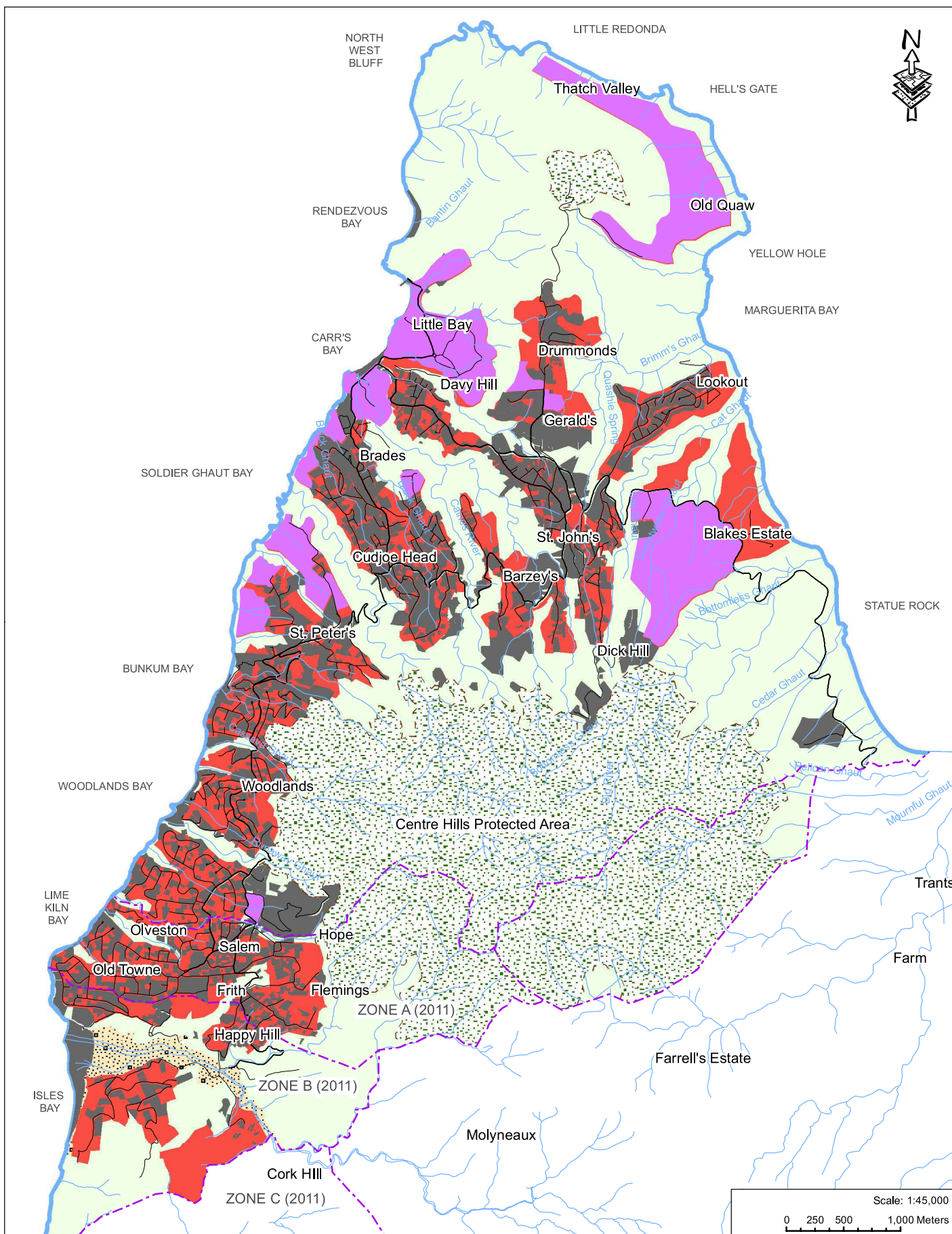
Table 5.1 Potential developable land by area

Area Name	Generally Infilling / greenfield	Area size (acres)	Percentage available	Land available (acres)
Barzeys				
Barzey's	greenfield	94	70	65
Brades				
Brades	Infilling	142	30	43
Brades Coast	greenfield	18	80	14
Manjack	Infilling	58	50	29
Baker Hill	Infilling	73	30	22
Cudjoe Head	Infilling	26	30	7.8
Drummonds and Gerald's				
Drummonds	Infilling / greenfield	77	50	35
Gerald's	Infilling / greenfield	92	70	64
Davy Hill / Little Bay / Carr's Bay				
Little Bay	greenfield	150	90	135
Davy Hill	Infilling	78	40	31
Carr's Bay	greenfield	40	90	36
Lookout				
Lookout	greenfield	118	20	23
St John's				
St John's	Infilling	98	20	20
Dick Hill	Infilling	44	50	22
Mongo Hill	Infilling	33	60	20
Judy Piece	Infilling	30	30	9
St Peter's				
St Peters	Infilling	135	40	54
Providence	Infilling	66	70	46
Virgin Islands	Infilling	88	60	53
Salem				
Salem	Infilling	140	60	84

Area Name	Generally Infilling / greenfield	Area size (acres)	Percentage available	Land available (acres)
Hope	Infilling / greenfield	31	60	19
Frith and Fleming	Infilling / greenfield	85	50	43
Happy Hill	Infilling / greenfield	30	50	15
Beachettes sub-division areas				
Woodlands	Infilling	62	40	25
Olveston	Infilling	213	50	107
Old Towne	Infilling	103	40	41
Isles Bay	Infilling	89	50	45
Other areas				
Blakes Yard	greenfield	26	100	26
Bentley Estate	greenfield	61	100	61
Blakes Estate	greenfield	192	100	192
Old Quaw and Thatch Valley	greenfield	200	100	200
			TOTAL	1,607 acres

The areas defined provide a total of approximately **1,607 acres** of developable land. The figure can be compared to the estimated 600 to 900 acres required for future development to 2022, as set out in *Section 4*. As such it can be concluded that Montserrat does not lack land space to accommodate a population of 10,000 at the densities set out in *Section 6.3.1*. Through developing additional land not included in the evaluation due to distance from existing infrastructure, as well as from developing higher density settlements, Montserrat's population could continue to increase beyond this figure.

Based on existing dwelling densities in each community, projections have been made of the area required to provide sufficient additional residences up to a population of 10,000. This indicates that between **280 and 350 acres** will be required, leaving between roughly **330 and 550 acres** available for development of non-residential facilities including community and recreation facilities, educational and health establishments, business premises, tourism-related items, and public infrastructure.



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- Main Roads
- Minor Roads
- Rivers and Ghauts
- - - Hazard Zones (2011)
- Existing Land Use (See Figure 2.4)
- Potential Developable Land
- Significant Development Sites
- Protected Forest
- Belham Valley
- Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

Development Land Evaluation

January
2012

Figure 5.3

It is not anticipated that all of this area must be utilised. Provided that land planning decisions are made in cognisance of the guidance provided by this PDP, there is plenty of space to provide fully for the intended resident and tourist numbers, and all associated businesses, located in such a way that Montserrat becomes a highly desirable place to live, to visit and to do business.

As discussed in *Section 2.5*, a significant constraint to development is the land market, the unwillingness to sell land to those who are not family or friends and as such, the limited availability of affordable property for sale or lease.

It should be noted that Local Area Plan (LAP) boundaries have been adjusted from the previous PDP (2000-2009) to take into account the potential developable land around the periphery of each settlement area. This ensures that the physical development strategy is based on a straight forward definition of the main settlement areas.

5.7 Significant Development Areas

As well as infilling in existing residential areas there are several significant areas of development opportunity. These are included in Table 5.1 but comprise larger non-fragmented areas. These are listed below along with a short description of the site opportunities and constraints. The location and situations of these areas are shown in Figure 5.3.

1. Little Bay (150 acres)

- A key development site for the new economic and tourism centre of Montserrat.
- Environmentally sensitive site including visual impact and Pipers Pond
- Government owned land.
- Access roads in place and utilities in place at the rear of the site. Drainage channels in place.

2. Carr's Bay (40 acres)

- Sheltered low lying land adjacent to Little Bay.
- Currently vulnerable to flooding and storm surge.
- Suitable for water based tourism use, port or industrial use.
- Fragmented private and government owned land.
- Poor road access to rear of site and little existing service infrastructure.

3. Manjack (8 acres)

- Several large open areas in close proximity to Brades and over-looking Carr's Bay.

- Suitable for residential development or light industrial activity (such as agro-processing).
- Fragmented, privately owned land.
- Services infrastructure available nearby. Roads in poor condition and would require widening.

4. Brades: coastal areas (10 acres)

- Two large tracts of land between Government Headquarters and the sea and to the south of the power station.
- Suitable for commercial use.
- Constrained by the noise of the diesel generators of the power station.
- Environmentally sensitive site.
- Fragmented private and government owned land.
- Services infrastructure available nearby.

5. Providence (20 acres)

- Sheltered site on the west coast in close proximity to St Peter's.
- Suitable for residential and small scale industrial development.
- Environmentally sensitive site.
- Fragmented privately owned land.
- Services infrastructure available nearby.

6. Virgin Islands (34 acres)

- Sheltered site on the west coast in close proximity to St Peter's.
- Suitable for residential and small scale industrial development.
- Environmentally sensitive site.
- Fragmented privately owned land.
- Services infrastructure available nearby.

7. Gerald's: land north of airport (6 acres)

- Flat land with attractive views to the east, adjacent to the John A Osborne airport.
- Suitable for a range of activities including commercial office units, retail, residential, recreational and community use.
- Privately owned by one land owner.
- Services infrastructure available nearby.

8. Gerald's: land in Pasture Piece (10 acres)

- Flat land with attractive views to the south and the east, close to the John A Osborne airport.
- Development should not extend above the ridge line between Gerald's and Little Bay to preserve the Little Bay landscape integrity.

- Suitable for a range of activities including residential, educational, recreational and community use.
- Privately owned by one land owner.
- Services infrastructure available nearby.

9. Salem: land adjacent to MSS (7 acres)

- Area of gently sloping land adjacent to the MSS.
- Suitable for small scale industrial activity (such as agro-processing).
- Privately owned with on-going planning permission for a water bottling plant.
- Services infrastructure available nearby but no access roads or infrastructure on site.

10. Blakes Estate (190 acres)

- Huge area of east facing gently sloping land.
- Environmentally sensitive, predominantly dry forest vegetation.
- Suitable for golf course, low density residential development, sports facilities.
- Privately owned by one land owner.
- No existing road access or service infrastructure.

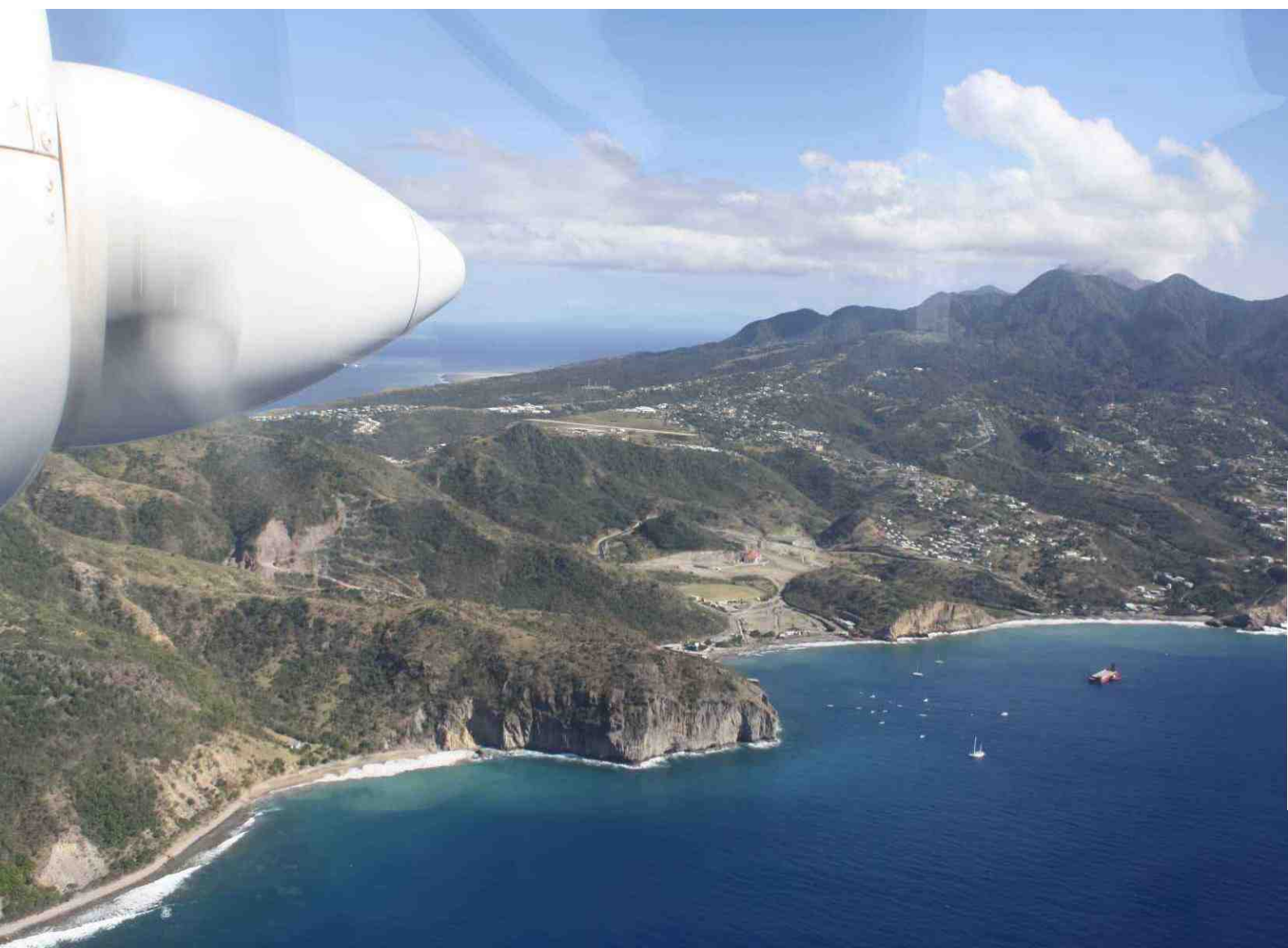
11. Old Quaw and Thatch Valley (200 acres)

- Large area of north and east facing, gently sloping land.
- Environmentally sensitive, predominantly pasture land.
- Remains the only land option for development of a further airport suitable for regional aircraft.
- Suitable for agriculture, low density residential development, tourism accommodation.
- Fragmented, privately owned land.
- Existing road access in extremely bad condition and currently impassable. No existing service infrastructure.



SECTION 6

PHYSICAL DEVELOPMENT STRATEGY



6. Physical Development Strategy

6.1 Introduction

The previous three sections have set out the planning parameters, provided an assessment of the forecast land requirements to 2022 and evaluated the available land suitable for development.

This section sets out the preferred option for the spatial development of north Montserrat in a way that meets current needs for communities, business and the economy while ensuring that development derives maximum benefit from, and does not compromise, environmental and built heritage assets.

The key elements of the strategy are outlined below. Detailed land use and development policies are then set out in Section 6.4 to guide development for each sector. This includes high level infrastructure policy for the plan period. Details and cost estimates for specific infrastructure items are provided in the separate '*Infrastructure Plan 2012-2022*'.

6.2 Key Elements of the Strategy

The PDP aims to integrate a wide range of issues into a physical development strategy that supports the SDP development objectives. The plan aims to facilitate social development and economic growth activities, identified via public consultations across Montserrat, while ensuring that people have access to a wide range of services locally, have access to appropriate housing and community facilities and are able to maintain or attain a high quality of life. This must also support the valuable environmental and built heritage assets that underpin socio-economic development of the island through tourism, quality of life and water provision.

Figure 6.1 illustrates the wider land use strategy for north Montserrat. The areas shown in orange are the main settlement areas. These are areas of more complex land use demands and community issues. For each of these areas a Local Area Plan (LAP) has been developed (see *Section 7 - Local Area Plans*) to describe the existing situation, the community issues, development opportunities and constraints, and the subsequent land use policy and infrastructure recommendations.

A new capital town at Little Bay

Since 1999 Little Bay has been considered as a new capital town and economic centre for Montserrat. Government is now advancing plans to develop Little Bay, Rendezvous Bay and Carr's Bay as an integrated 3-Bay concept aimed at providing modern, efficient and attractive residential, commercial and tourism-related facilities that will spearhead the island's economic recovery.

It is proposed to develop a port at Carr's Bay that will accommodate small cruise-ships, cargo vessels, the ferry and some large yachts. The new quayside along Carr's Bay would be developed as the new town's waterfront, providing local business opportunities by way of shops, cafés and so on. This waterfront would extend through to the seaward end of Piper's Pond where the "Evergreen Roundabout" (from old Plymouth) would be recreated. The new town would then extend from the roundabout eastwards to the new market and business court area within Little Bay. Within Little Bay itself, a high-end resort and government buildings would be constructed, along with a new recording studio to revive Montserrat's music industry. Rendezvous would remain as a natural paradise unless there is a compelling case for a development such as a suitable high-end eco-style hotel or an adventure activity centre to further boost the tourism industry and overall economy of the island.

The existing jetty at Little Bay could be developed into a yacht marina, with a boatyard and boat repair facility in the Little Bay Ghaut area, creating a potentially significant new business opportunity. Local fishing vessels would be accommodated with safe moorings and maintenance areas.

A resilient network of decentralised village centres

While Little Bay and Brades will provide many of the island's services, retail and commercial facilities, the island's other village centres will continue to meet the retail and commercial needs of local communities. This will ensure local access to services and, following lessons learnt from the loss of Plymouth, will avoid the risk of locating all services in one location.

Adequate and appropriate housing

Infilling and consolidation of existing settlement areas will meet most of the projected residential development needs during the plan period. As identified in *Section 5.7*, several significant new sites can be developed if there is demand for larger housing projects. The maximum densities of housing plots will be such that residents are able to own an area of garden. As development increases in the

future and during the next PDP plan period it is anticipated that residents in Montserrat will need to accept higher density housing in some areas.

Social housing will occur in areas of high and medium density housing and will be mixed with private properties to ensure that areas of low income households are avoided.

Economic activities

▪ **Tourism**

Based on improved air and sea access, tourism will continue to grow toward a target figure of 15,000 arrivals per year. High-end tourism is intended for Little Bay, including a flagship hotel, restaurants, villas, volcano interpretation centre, museum, and a bio-diversity centre. A port at Carr's Bay will provide for cruise/ships, large yachts, cargo vessels, and the ferry. Villa tourism will continue to be encouraged in the Beachettes area, while the development of guesthouses and restaurants will be encouraged throughout the north.

Sports tourism and villa tourism will be supported through strong investment in appropriate facilities. A golf course will be developed on Blakes Estate along with a high-end villa development. This will complement the existing FIFA football pitch and can be enhanced with the provision of further sports facilities such as tennis and basketball.

Tourism based on the natural environment and the Soufrière Hills volcano will also be nurtured through permits for suitable eco-lodges at selected locations. These could serve the additional purpose of well managed buffer zones surrounding the protected Centre Hills area.

▪ **Agriculture**

Global food security issues and high import costs currently leave Montserrat in a vulnerable position. Sufficient land is allocated on the northern and south-western fringes of the protected Centre Hills forest to meet and exceed the national food production targets. It is envisaged that agricultural production will benefit from new techniques and the use of greenhouses and net-houses, reducing the amount of land required and the incidence of insect pest damage to vulnerable crops. The MAHLE will encourage backyard gardening by ensuring appropriate housing densities.

- **Office space**

Office space for commercial activities will be developed as the demand arises. It should be located in Little Bay, Brades, and in a new commercial zone north of the airport in Gerald's. There should be adequate provision for local business in each village centre. Government offices will continue to be primarily located at the current headquarters in Brades, but some ministries and departments – particularly those offering services directly to the public – will be relocated to Little Bay.

- **Retail**

As mentioned above, larger retail premises will be located in Little Bay, Brades, Gerald's, while local facilities will be promoted in all village centres.

- **Industrial and storage facilities**

Suitable light industrial and storage facilities (warehousing, etc) will be permitted as part of, as well as inland of, Carr's Bay port and in the former quarry basin in Little Bay Ghaut. Permissions will depend on safety considerations with respect to the bulk fuel facility, and the safe and efficient movement of cruise ship passengers and freight through the port entrance area where congestion must be avoided.

An industrial zone is also located at Brades around the existing power station, where land was already allocated in the previous plan for industrial and storage purposes. Parts of Happy Hill are allocated for small scale ash/sand-based or agro-processing activities.

- **Sand Mining**

For the foreseeable future, sand-mining activities will be based in the upper Belham Valley area. Sand mining and associated processing and stockpiling activities will not be permitted below the lower mining limit set out in *Section 7.11*. These operations will be managed in such a way as to minimise the impact on the surrounding residential areas and on the environment. All sand-mining activities will, therefore, be subject to the *Health, Safety and Environmental Management Guidelines for Sand Mining in Montserrat: An Operational Plan for Reducing Environmental and Social Impacts* (2012), to be enforced through appropriate management and legislation.

Community Services

■ **Health Facilities**

The island's only hospital will be redeveloped during the plan period to meet the needs of the expected increase in population and changing demographic profile. Local clinics will be similarly upgraded in response to changes in local population and demographics. Improved health care facilities will be provided with additional local clinics in Lookout and Little Bay.

■ **Educational Facilities**

Existing primary school arrangements are considered to be adequate for projected demand during the plan period, but additional pre-school (kindergarten) facilities could be provided by the private sector. Options for the possible relocation of the Montserrat Secondary School have been identified. Private sector investment in tertiary education will be promoted, including a permanent medical school and possibly a school of public management; both of these facilities would be "twinning" with appropriate well-reputed academic institutions, probably in the USA, UK or Canada.

■ **Recreational Facilities**

The need for public recreation space in Montserrat will be addressed through the provision of safe and appropriate green space and recreational facilities in every village centre. Community centres should be available for public events, local activities and training in each village centre. Land has been identified at Woodlands, St John's and Lookout for additional open recreation space and Brimm's Ghaut is to develop a network of exercise trails.

■ **Public Cemetery**

The location of a national public cemetery has been approved in eastern Lookout. This will be buffered by an attractively landscaped community park. Further public cemeteries will be required during the PDP plan period and suitable locations will be found subject to ground condition studies.

Infrastructure

▪ **Geothermal Energy**

Geothermal energy will be developed as a primary economic driver for the island such that it can provide a reliable, economic and sustainable means of producing the island's electricity. Subject to successful exploration results, the geothermal power plant will be large enough to provide sufficient energy for export to Antigua.

▪ **Telecommunications**

Montserrat will be reconnected to the two Caribbean regional fibre-optic telecommunication networks. This will provide fast, reliable Internet and telephony links to the whole world and encourage the establishment of Information and Communication Technology (ICT) businesses on the island. Additionally, it will facilitate video-conferencing for international business purposes and video-lecturing in support of higher education. Where appropriate, services will be placed underground.

▪ **Access**

The new port at Little Bay will accommodate the ferry, fishing vessels, yachts, and small to medium-sized cruise ships (max. 1,000 passengers). The port area and moorings for relatively small boats will be protected by a suitable breakwater. A marina at Little Bay or Carr's Bay will serve the needs of larger yachts.

- The airport runway at Gerald's is sufficient to meet projected passenger movements in the plan period, but the terminal building will be upgraded to increase passenger throughput, provide for CIPs, and improved restaurant facilities. The control tower will be relocated, possibly integrating it with the terminal building, and space will be designated as a commercial helipad. Issues of safety will be held under constant review and this will include reserving land for a possible new runway.

▪ **Road Network**

The road network will be gradually improved, including new link roads where appropriate to improve traffic circulation to ease congestion and avoid bottlenecks in the event of evacuating areas nearer to the Exclusion Zone. These investments will be protected via an increasingly proactive approach to preventative road maintenance.

Safety will be improved for vehicular road users by improving road alignment, road markings and roadside features. Pedestrian safety will be enhanced via suitable sidewalks between residential/commercial areas.

- **Energy**

The reliability of the power network will be improved by replacing obsolete equipment, including old diesel generators and transmission and distribution items. Appropriate distribution items will be placed underground. Geothermal energy should become available during the plan period, reducing the role of the diesel power station to one of a backup facility. Geothermal will reduce the reliance on other forms of renewable energies, but solar panels (especially for hot water provision in houses and offices) will be actively encouraged.

- **Water Supply**

The springs and wells that provide the island's fresh water will be protected, including a programme to improve the existing infrastructures at these sites. Potable water storage capacity will be increased, initially to address current needs and then to provide for projected demand associated with major developments at Little Bay, Carr's Bay and elsewhere across north Montserrat. Old distribution lines will be gradually replaced to maintain the quality of supplies and to meet projected demand.

- **Water Treatment**

Existing sewage treatment facilities will be upgraded, and communal systems will be introduced to meet the needs of growth in existing residential areas and for new residential developments. Some facilities, such as Davy Hill and Lookout, will be relocated to avoid dangers from effluent overflows.

- **Solid Waste**

The existing landfill site at New Windward will be redesigned and reorganised to improve the effective environmental management of solid waste. This, as far as practicable, will include lining the existing site and setting aside separate areas for specific waste streams.

- **Emergency Services**

The police, fire and ambulance stations will be retained at Brades and Salem. Access/egress at Brades will be improved via a new road link. A new ambulance station will be provided at Little Bay to serve tourists and new

residents in this area as well as the adjacent areas of Davy Hill, Carr's Bay, Drummonds, and Gerald's.

▪ **Tourism Infrastructure**

Hiking trails, clearly marked from the main roads, will encourage tourists to investigate Montserrat's natural beauty. An improved maintenance programme will make it easier for people to undertake walks into the Centre Hills and Silver Hills areas. Heritage programmes will identify public buildings of cultural importance to be protected and, in suitable cases, to be opened to the public as places of interest.

Minimising vulnerability to disaster

Land development is proposed in a manner that vulnerability is reduced to the range of disasters that Montserrat is likely to experience, including the anticipated effects of climate change. This is reflected, for example, in the location of critical infrastructure and the location of utilities below ground. Where land use planning is unable to minimise the risk to residential areas to phenomena such as hurricane wind speeds, it is crucial to mitigate these risks through enforcing appropriate development standards, as set out in *Section 8*, and appropriate building codes.

Where areas are at perceived risk from volcanic activity, such as Salem and its immediate vicinity, it is important to support social and economic development, making these areas vibrant and attractive places to live and to do business.

Environment and Conservation

Montserrat will ensure that its reputation as the "Emerald Isle of the Caribbean" will continue with strict protection maintained of the Centre Hills. A network of riparian strips and green buffer zones along the island ghauts will be closely managed to avoid inappropriate development that may threaten ecology, water courses, or attractive views. This green core will continue to support quality of life and economic development through recreation, and low volume, eco-appropriate tourism. Strict management measures will be employed to balance development with environmental sustainability across the island.

Cultural Heritage

The historic focus of heritage and archaeological protection has been Plymouth and the south of Montserrat. Permissions for development in the north will take full account of important sites of historic and socio-cultural significance. Wherever possible, sites and artefacts will be preserved for future generations and to ensure that Montserrat's multi-cultural population understands the island's rich heritage and sense of self. An urgent examination of these sites will lead to a series of detailed protection and management measures. Where it is not possible to fully preserve a site, adequate opportunity must first be given to qualified archaeologists to examine, excavate and document the site, and for artefacts to be catalogued and moved to the museum.

6.3 National Land Use Policies

This section sets out detailed national land use policies by sector for north Montserrat. This is followed by *Section 7* which provides more detailed land use zoning and supporting policy for the main settlement areas in the form of Local Area Plans.

6.3.1 Housing

Policy H1 - Housing Development

It is anticipated that private housing development will occur in line with demand. If population growth occurs in line with the economic projections as estimated in *Section 3.2*, demand for housing stock is likely to increase as set out in the table below.

Table 6.1 Forecast Housing Stock

Year	2011	2016	2022
Total housing stock*	Approx. 3000	3735	4,850
Additional stock	--	735	1,850

*2011 housing stock to be updated when census figures are released

Where possible, development should be implemented in a coordinated way so as to ensure cost effective investment in infrastructure and to avoid dispersed, fragmented development outside of existing residential areas.

A range of densities are proposed:

Table 6.2 Residential density classifications

Density	Dwellings per acre	Plot size (sq. ft.)	Approx. sq. m. Equivalent
Low density	2 – 4	7,500 – 13,000	697 – 1,208
Medium density	5-10	4,500 – 7,499	418 – 696.9
High density	10-15	2,500 – 4,499	232 – 417.9

Low density housing will take the form of villa type housing. Medium density dwellings will take the form of small villas, houses and individual units. High density dwellings will take the form of small houses, individual units, and where appropriate, town houses, duplexes, linked units and apartments (see *Development Standards, Section 8*, for maximum building heights).

All development should be in accordance with the *Development Standards* set out in *Section 8*. The design style of dwellings should wherever possible utilise traditional features of Caribbean architecture.

Provision is made for housing by the government and the private sector. It includes provision for dwellings and serviced lots to meet the needs of all household types and income groups. Implementation will be mainly through stimulation of the land market and through government acquisition where absolutely necessary.

There are no priority housing areas; development will be encouraged throughout north Montserrat on an equal basis. Many existing residential areas across north Montserrat will continue to be developed through the subdivision and development of lots.

While private sector housing will account for most of the housing supply, there will be cases where government built housing is required. There are several significant development areas, as identified in *Section 5.7* that may be suitable for larger coordinated projects as the need arises.

Residential properties in Little Bay will be developed by the private sector but adhering to guidelines provided by GOM, through the Montserrat Development Corporation (MDC). See *Section 7.5* for further details on the development of Little Bay.

Refer to *Appendix C* for an estimation of land required for housing development in each area of north Montserrat.

Policy H2 - Infilling and Consolidation of Existing Settlement Areas.

During the plan period to 2022 housing throughout the north will be provided mostly by via private sector development, the majority being individuals constructing their own dwellings. Figure 5.3 in *Section 5* illustrated that there is a significant potential for infilling existing residential areas. The benefits of consolidation include local access to services and shops, reduced demand for new service infrastructure investment, and reduced impact on Montserrat's natural resources.

Policy H3 - Residential Subdivisions

Residential subdivisions in the areas of Woodlands, Olveston, Old Towne and Isles Bay are to be maintained as low density residential land use. These areas provide for Montserrat's substantial residential tourism sector.

The existing property covenants will be enforced to ensure that inappropriate development does not occur within the subdivision areas. Commercial development

is generally not permitted in these areas. Exceptional cases will be considered where it is thought that the commercial activity will not detract from or can even add to the quality of life in the surrounding area.

Policy H4 - Social Housing

GOM is committed to providing assistance to all vulnerable households to ensure adequate housing or sheltered accommodation so that no-one is without suitable housing. All remaining communal shelters will be vacated and occupants transferred to alternative government owned accommodation. Sub-standard single family units will be replaced. As funds permit, the GOM will pursue a policy of selective land acquisition that aims to integrate future social housing within existing and new developments to ensure an equitable socio-economic mix. Future social housing provision will be developed in line with the provisions of GOM Housing Policy (in preparation).

6.3.2 Education

Policy E1 - Pre-School Education

Pre-school education facilities will be established on a demand led basis and can be accommodated in existing buildings and private houses once the necessary licence and permissions have been granted.

Policy E2 - Primary Education

Existing primary school capacity is sufficient to respond to population growth targets up to 2022.

Land occupied by the St Augustine Private School is formally zoned for education and provision made for the expansion of the school within the current site. Consideration is to be given to additional expansion into directly adjacent lots.

Policy E3 - Secondary Education

The buildings comprising the Montserrat Secondary School (MSS) at Salem and the site layout do not constitute a suitable basis for continuation or expansion of this establishment. **Policy E3** recognises that refurbishment and redevelopment of the current site may be compromised by space and disaster management constraints and makes provision for a new secondary school campus in north Montserrat.

A number of potential sites were evaluated with the preferred option at Pasture Piece outlined in Table 6.3. The locations of these are illustrated in Figure 6.2. This

site is preferable but site selection is still subject to detailed consultation and the relevant technical, social, economic and environmental studies prior to relocation.

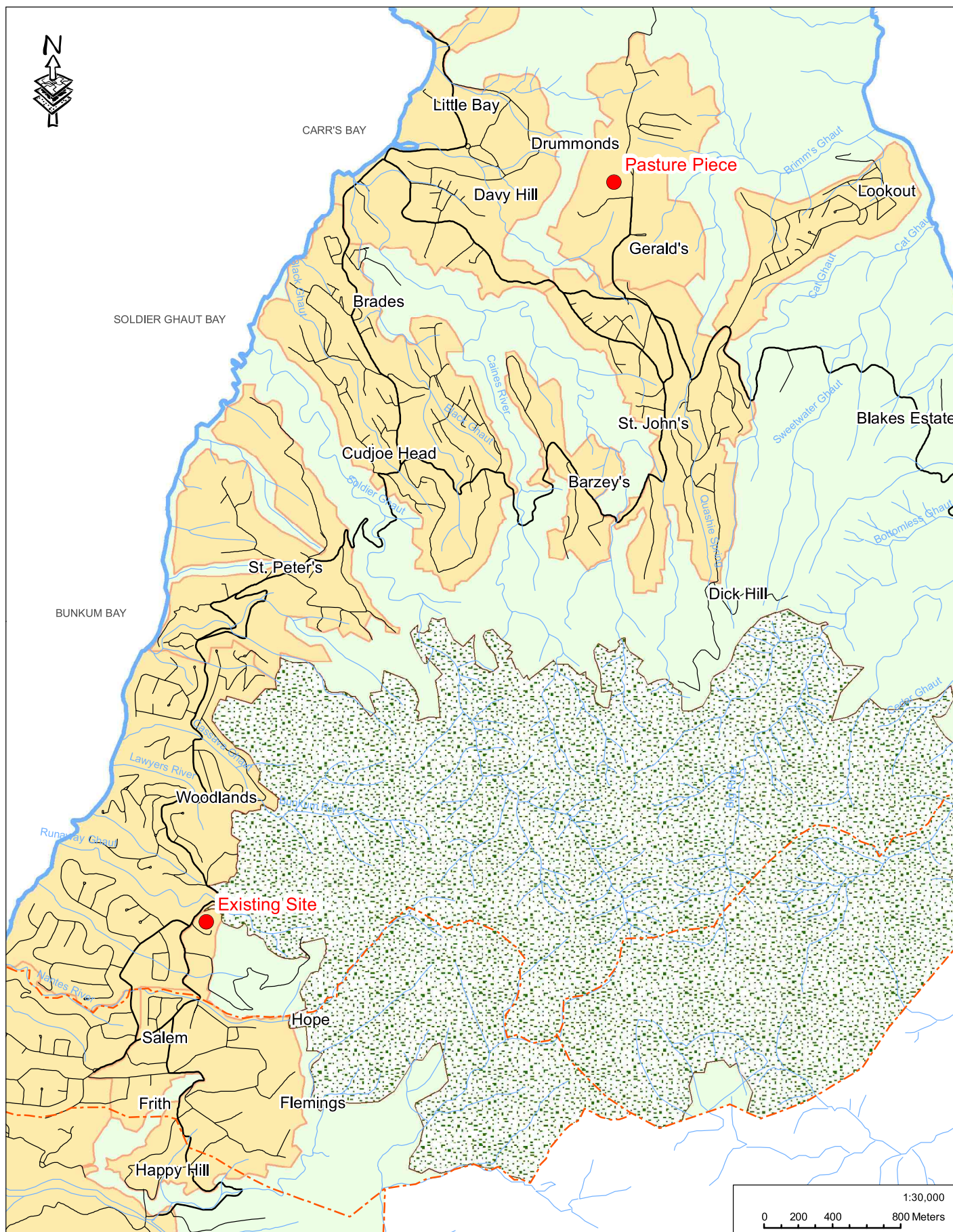
Table 6.3 Evaluation of existing and potential site for the MSS

Site location	Site Area (approx.)	Site Situation	Proximity to pupils homes	Immediate access	Land ownership
Existing Site (Salem)	6 acres	Constrained, sloping land	Distant from main population base	Direct access from A01 road to Salem	Government
Pasture Piece, Gerald's	10 acres	Flat and gently sloping area	Close to main population base	Condition of roads generally good	Private (many family members with equal rights)

If the MSS relocates, the vacant land is still to be designated for an educational land use.

Policy E4 - Further Education

A key function of the UWI Open Campus is the provision of distance learning and vocational courses. To maximise day time use of its facilities, UWI have expressed a desire for a new site location at Brades or Little Bay. This releases land at MSS for alternative development.



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Legend

- Potential MSS Sites
- Main Roads
- Minor Roads
- Rivers and Ghauts
- - - Hazard Zones (2011)
- LAP Areas
- Protected Forest

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Potential MSS
Locations

January
2012

Figure 6.2

6.3.3 Health Services

Policy HE1 - Hospital Facilities

The renovated Glendon Hospital in St John's accommodates 38 beds and more and better quality facilities. The renovated hospital will remain sufficient for the projected island population by 2022.

Policy HE2 - Health Clinics

A health clinic is to be provided for the Lookout community to cater for existing needs.

Subject to revisions of the forecast population growth, land is to be reserved for clinics at Gerald's or Drummonds and/or at Little Bay to serve future population growth in these areas. A clinic at Little Bay would serve an additional function of attracting more people into the new centre.

All other communities have sufficient level of service to accommodate forecast population growth.

6.3.4 Community Facilities

Policy CC1 - Local Community Centres

Section 5.2 stated that Davy Hill and St John's are to receive community centres. Land has been allocated and the plans are going ahead.

Land will also be allocated for community centres at:

- St Peter's
- Gerald's and Drummonds (as a combined facility)

Each community centre should include a minimum of:

- classroom and teaching facilities
- ICT facilities and internet access
- a venue for large group meetings and community events

Buildings should also act as hurricane-proof shelters and emergency accommodation for post-disaster relief efforts.

Community centres should also generally have hard court sports facilities and shaded outdoor areas where families and small children can spend time, plus indoor as a play areas for use during inclement weather (See **Policy RL2**)

Policy CC2 - Public Library and National Archives

Land is to be allocated at a suitable location in Brades or Little Bay for a public library. The national archives are to be incorporated into the National Museum.

6.3.5 Recreation and Leisure

Policy RL1 - Local Recreation

Land is to be allocated for local recreational facilities at:

- Davy Hill
- Gerald's
- St John's
- St Peters

Land allocations are dependent on the land being made available in each area and on negotiation with land owners. See *Section 7 – Local Area Plans* for more detailed proposals relevant to each Local Area.

Policy RL2 - Local Play Areas for Small Children

Land is to be allocated in the centre of each community for local play areas comprising facilities such as swings, roundabouts and slides.

Policy RL3 - Sports Facilities

The cricket pitches at Little Bay and Salem Park are to be preserved and maintained to an appropriate standard.

Policy RL4 - Golf Course

Land is allocated for the private development of a golf course on Blakes Estate. Also see the sports tourism **Policy TE2**.

Vulnerability of water supply is a critical issue for Montserrat. All proposals for a golf course must include water management measures including rainwater capture and

storage. Restrictions may need to be applied in the event of any forecast water shortage.

Proposals must ensure that affordable local access to the golf course is prioritised.

Policy RL5 – Exercise Trails and Recreational Space at Brimm’s Ghaut

Land is allocated in Brimms Ghaut as indicated in Figure 6.1 for activities such as walking, running and cycling. Trails should be planned and created to allow a series of routes and links so that loops of different length and gradient can be included. Access is to be provided from Lookout via Margarita Bay and the west of Lookout, from St John’s via the hospital grounds and from Gerald’s and Drummonds via the upper end of Brimms Ghaut. Appropriate and sufficient parking must be provided in adjacent to recreation and leisure sites.

Policy RL6 - Recreational Access to the Silver Hills

In accordance with the provisions of **Policy E1** and in conjunction with local land owners, all-weather access walking trails of varying distances shall be established. These should be designed and constructed in keeping with the surrounding landscape and be accessible to less mobile individuals. The trails will include picnic facilities and educational signboards highlighting items of cultural and ecological importance.

Policy RL7 - Hiking Trails

The current network of hiking trails, damaged during Hurricane Earl in 2010, will be upgraded to include clear signposting and information at strategic locations. Signboards along the trails will bring attention to important cultural heritage and environmentally important features on their routes.

Policy RL8 - Mountain Biking Trails

Consistent with **Policies RL6** and **E1** to encourage recreational use of the Silver Hills, a mountain bike trail shall be established. Planning permission will include suitable restrictions to ensure protection of the environment in the surrounding areas.

Policy RL9 – Recreational Land in the Belham Valley

The lower Belham Valley to the west of the lower mining limit (Refer to *Section 7.12*) is designated as recreational space.

Policy RL10 – Recreational Land at Woodlands and Waterworks Estate

Approximately 8 acres of land is designated as recreational use at Woodlands beside Cassava Ghaut as indicated in *Section 7.10 – LAP for Woodlands and Olveston* and Figure 7.18. This is privately owned and development here is likely to be privately driven.

Additional land is available for recreational use at the Waterworks Estate, south east of Salem, subject to discussions with the land owner.

6.3.6 Religious Services

Policy RE1 - Public Cemetery

Land is allocated at the eastern end of Lookout for a public cemetery. It is estimated that at the current mortality rate this 3-acre site will have sufficient capacity to 2018.

Additional cemetery space will be required to meet the projected increasing population and an increasing proportion of elderly residents returning from abroad. Suitable sites are to be located well before the full capacity of the Lookout site is reached. Potentially, several sites in the Silver Hills are suitable subject to ground condition surveys.

Policy RE2 - Interdenominational Church

Land is to be allocated at Little Bay for an interdenominational church. This must be developed in consultation with the Christian Council as well as representatives of non-Christian faith. This must provide sufficient parking as stated in the Development Standards in order that it serves a secondary function as a safe hurricane shelter.

6.3.7 Agriculture

Policy A1 – Defining Agricultural Land

A total of 250 acres of agricultural land are allocated on the northern fringes of the Centre Hills as indicated in Figure 6.1. These are to be leased from landowners by GOM and then sub-leased to local farmers. A buffer of 100 metres is to be maintained between the agricultural land and the protected forest boundary. This is to safeguard vulnerable species such as the Oriole from disturbance and to prevent increasing pressure on the forest boundary. Activities permitted in the buffer zone

are restricted to the cultivation of fruit trees. Additionally requested activities must be agreed to by the Department of Agriculture and the Department of Environment.

Existing agricultural land at Upper Blakes and Duckpond are to remain as such.

Access and water storage is crucial to developing and maintaining a high level of food production on agricultural land. Sections 6.3.14 and 6.3.17, provide policy on agricultural access roads and water infrastructure respectively. Further details are provided in the associated *Infrastructure Plan 2012-2022*.

Policy A2 - Safeguarding Agricultural Land

Development permission will not be granted for non-agricultural development which utilises agricultural land as designated in Figure 6.1. Exceptions may be made for the purpose of light footprint infrastructure including energy, telecommunications, water supply and sustainable treatment of wastewater and solid waste.

Policy A3 – High-Tech farming

To help meet food production targets set out in the Department of Agriculture's *Food Production Strategy 2009-2014* and subsequent documents, increased consideration is to be given to the use of new agriculture technologies including greenhouses, net-houses and hydroponic irrigation systems.

Land is to be allocated in response to demand, but must be subject to the *Development Standards* in *Section 8*. Where necessary, appropriate vegetation screening should be in place to reduce visual impact.

Policy A4 Back Yard Farming

Minimum plot sizes set out in ***Policy H1*** are such that every dwelling should have sufficient space for the household to grow a variety of fruit and vegetables to reduce the need for imported foods.

Policy A5 Selling Agricultural Produce

The existing market in Little Bay should function increasingly well as cultural and business activities increase in Little Bay.

Land is allocated for a simple covered market in the centre of Salem. See *Section 7 - Local Area Plans* for further details.

Policy A6 – Semi-Intensive Rearing and Controlled Pasture Land

Sufficient land is to be allocated for semi intensive and for controlled rough grazing. This is to facilitate a general move away from free roaming livestock across north Montserrat which has a negative impact on the production of local produce and on ecology.

Several areas in the Silver Hills, as well as areas to be allocated close to each community, are to be fenced for these purposes.

It is essential that water supply for livestock are maintained in each fenced area. Sufficient ponds must be maintained as required to provide livestock with adequate drinking water.

Policy A7 Abattoir

Land is allocated in the west of Brades for an Abattoir. Development proposals will demonstrate the safe management and disposal of wastewater and waste and present effective design for the minimisation of foul and noxious odour. (See *Section 7.5*)

6.3.8 Fisheries and Maritime Services

Policy F1 –Breakwater and Port

Subject to detailed feasibility studies, including bathymetric survey and Environmental and Social Impact Assessment, land is allocated at Carr's Bay for the development of a new breakwater and upgraded port facilities. This is subject to the 2012 Carr's Bay port design.

Policy F2 - Fisherman's Wharf and Facilities

Subject to detailed master planning and site feasibility studies the port development (***Policy F1***) may include provision for small fishing vessels. An alternative site for fishermen's facilities would be the north end of Little Bay adjacent to the marina, including both dry-side maintenance and storage and safe marine moorings. Fishermen will also have access to the proposed boat yard at Little Bay (See *Section 7.5*). A nearby site will be identified for storage lockers and fresh-fish processing facilities. Site location and operating guidelines will be necessary to mitigate environmental health risks associated with this land use.

6.3.9 Emergency Services and Security

Policy ES1 – Salem Police and Fire Station

The existing police and fire station at Salem will continue to serve the population living in Salem and adjacent areas.

Policy ES2 – Little Bay Fire Service Facilities

Land is to be allocated in Little Bay for a small fire station to include space for a fire tender, 4x4 Fire and Rescue truck and an ambulance.

Policy ES3 - Prison

The prison is to retain its current location in Brades. Any required expansion of the prison is to be accommodated adjacent to the current site.

Policy ES4 – Critical Communications Infrastructure in the Silver Hills

The existing facility on the summit of the Silver Hills is to appropriately maintained and earthed to prevent damage from lightening, rain water and strong wind.

6.3.10 Tourism

General tourism strategy

Montserrat has many attractions to offer the tourism market and it is important that it emphasises its niche in terms of branding and attracting the desired types of tourist. GOM wishes to develop a model of low volume, high spend tourism which will capitalise on a combination of its natural and built environment and exclusive experiences for visitors. This is to be achieved while minimising the cumulative negative impacts of development.

Montserrat's positive attributes include:

- The Soufrière Hills Volcano and the Montserrat Volcano Observatory
- Attractive natural environment based on protected Centre Hills forest, ecologically rich ghauts and coastline and the Silver Hills area.
- Bird watching along the northern and eastern cliffs
- Archaeology and heritage across the island
- Safe and genuine communities with friendly and hospitable people
- Wide range of high end villas and comfortable guesthouses

- An 'undiscovered' and 'off the beaten track' feel
- On route for regional cruise ships and the Caribbean leeward islands yachting routes
- A number of pristine dive sites
- Several world class hiking trails
- Unique St. Patrick's Festival Celebrations

Additional significant selling points when implemented:

- Sports tourism facilities including a golf course
- Better established eco-tourism
- Volcano Interpretation Centre (VIC) and National Museum

Increasing tourism arrivals and return trips is based on improved sea and air access, in addition to competitive prices to attract day trippers. As well as this there are several key policies that will help to recover tourism in Montserrat towards its former level of 15,000 arrivals per year. The Montserrat Tourist Board estimates that 500 to 600 beds are required in addition to the existing 243 beds to accommodate 15,000 arrivals per year with a weakly peak of 700 tourists.

Figure 6.3 shows the current tourism infrastructure, important to maintain for future prosperity. A list of the tourism attractions plotted is available in *Appendix G*.

Policy TE1 - Tourism Centre at Little Bay and Carr's Bay

Little Bay and Carr's Bay will develop according to the revised MDC master plan with a mixture of tourism, food and leisure services, commercial and office space, a hotel development and some residential units. See the Local Area Plan for Little Bay, Carr's Bay and Davy Hill in *Section 7.5* for more detail on development options in this area.

Policy TE2 - Sports Tourism and Villa Development

Land is allocated within the Blakes Estate for the development of sports facilities and supporting villa development. There are plans for a golf course (***Policy RL4***) with tennis and basketball facilities. These would be set within the very attractive landscape of the Blakes Estate along with approximately forty low density villas. These facilities will complement the FIFA football facility and could be eventually added to with track and field facilities. While the sports facilities will attract visitors from overseas, visiting sports teams, sports training camps and so on, it is crucial that these facilities are made available for public and community use.

Policy TE3 - Hotel Facilities

Land is allocated for the development of a 50 to 100 bedroom hotel in Little Bay. It is anticipated that this will be developed in conjunction with the port and other elements of the Little Bay and Carr's Bay site.

The site occupied by the Vue Ponte Hotel is allocated for hotel, guesthouse of residential land use. The reopening of the hotel is encouraged.

Further suggested sites for hotel development are to be evaluated by the Planning and Development Authority on a case by case basis.

Policy TE4 - Guesthouses

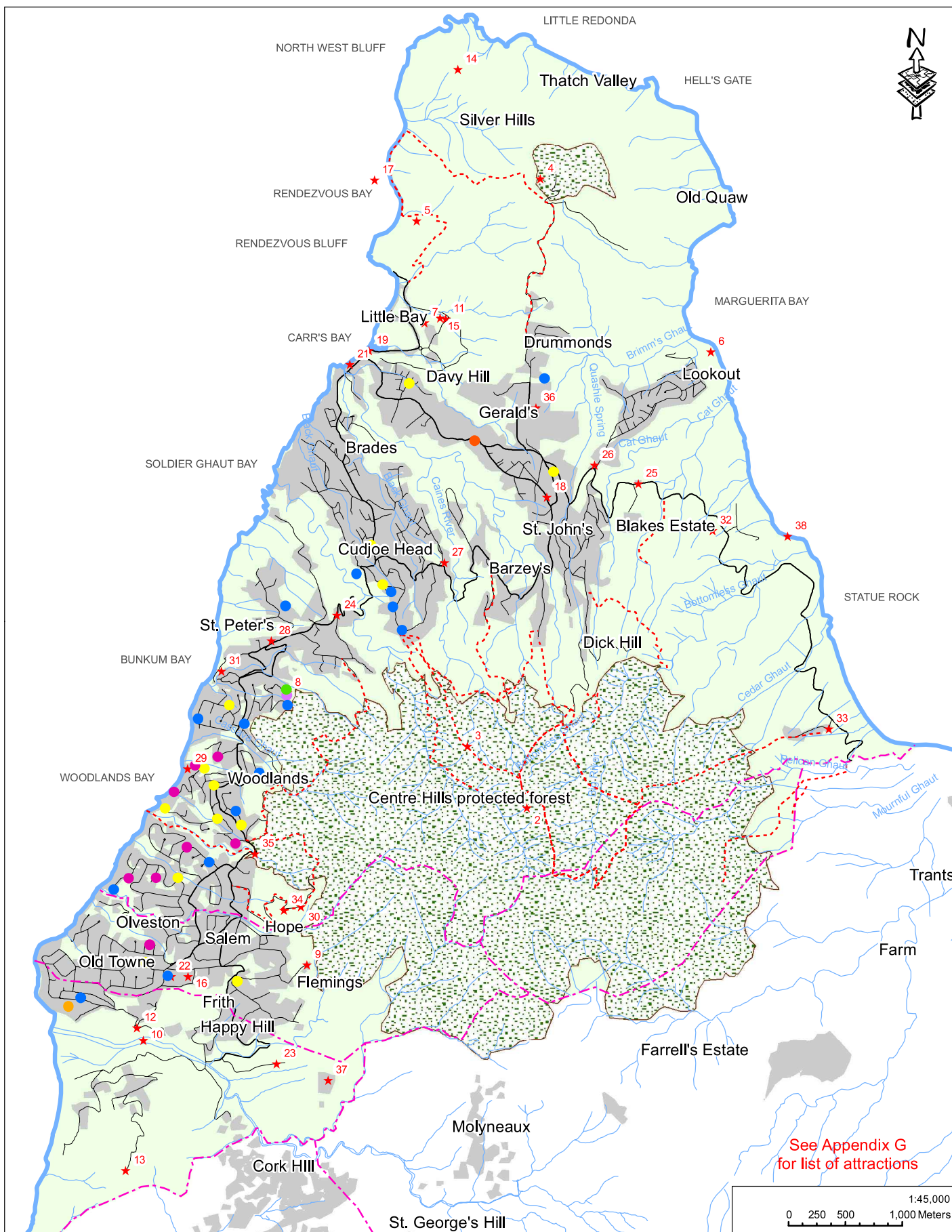
Guesthouses play a crucial role in providing tourist and business accommodation in Montserrat and will continue to do so. The maintenance of existing and establishment of new guesthouses is to be encouraged across the island.

Policy TE5 - Eco-Tourism

Montserrat is well positioned in terms of natural assets and target visitor population to provide successful high-end eco-tourism. An attractive, but low-end, Eco-lodge demonstrates the concept at Mount Pleasant, St Peter's. There are several locations where such a development could be located, the most favourable being on the eastern and western fringes of the protected Centre Hills, outside the forest boundary, and close to Rendezvous Bay. Developments must be strictly controlled to minimise negative impacts on the environment and to set a high standard in sustainable development and the use of 'green' utilities and technology.

Policy TE6 - Walking / Hiking Trails

In line with the provisions of **Policies RL3** and **RL4** to support the emphasis of tourism based on the enjoyment of nature, the existing network of hiking trails should be well maintained. Additional trails should be established in the Silver Hills area and consideration given to an extension of the network in the Centre Hills. Consideration is to be given to developing a coastal trail between Rendezvous and Jack Boy Hill, via Lookout. Newly developed trails have minimal impact on the environment while providing access so that the environmental assets can be enjoyed.



See Appendix G
for list of attractions

0 250 500 1,000 Meters
1:45,000

GOVERNMENT OF MONTSERAT

Ministry of Agriculture, Land,
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Legend

- | | |
|--------------------------------|------------------------------|
| Existing Tourism Accommodation | ★ Tourism Attractions (2011) |
| ● Apartment | --- Hiking Trails |
| ● Camping | --- Hazard Zones (2011) |
| ● Eco-Lodge | --- Rivers and Ghauts |
| ● Guesthouse | — Main Roads |
| ● Hotel | — Minor Roads |
| ● Hotel (Out of Use) | ■ Protected Forest |
| ● Individual Rental Villa | ■ Built-up Area (2011) |

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

Existing and Proposed
Tourism Infrastructure

January
2012

Figure 6.3

TE7 - High Wire 'Forest Experience' in the Centre Hills

Montserrat could add to its tourism product with a forest experience based on a short but intense trip through the Centre Hills forest at tree canopy level. This is based on wire walks rope swings, climbing obstacles, all while admiring the view and experiencing the forest. Such an experience should be challenging, fun and educational, and should appeal to adults as well and children.

Such a development must minimise its impact on the surrounding environment and should be integrated within it. Access to the site must be safe and convenient and sufficient parking must be provided. Safety is a key issue and participants must wear appropriate safety equipment.

TE8 - Tourism Services and Infrastructure

Tourism services are to be particularly encouraged in Little Bay and Carr's Bay including premises for shops, restaurants, bars, diving businesses, boat trip and island travel agencies, craft and souvenir industries.

There is a general presumption in favour of upgrading and developing additional tourism facilities including, but not limited to, changing and WC facilities, sheltered lookout and view points and appropriate signposting and information boards.

TE9 - Safeguarding Views

Much of the appeal of the 'Emerald Isle' of the Caribbean is in the natural landscape. Protecting views and green spaces is ingrained in the land use strategy. Further efforts are to be made to ensure that these views are not degraded through inappropriate development (**see Policy E5**) and, where appropriate, visual impact is to be considered as part of the evaluation of planning applications. Adhering to the *Development Standards* in *Section 8* will also minimise negative visual impact of developments.

TE10 - Character Areas in Villages

Montserrat has maintained a number of village centres which are attractive and make up a unique character based on vernacular style of architecture, lay out of buildings and spaces and community atmosphere. These are to be formally managed **Character Areas**. The process of designation, protection and enhancement can result in areas which not only can be marketed as a tourist attraction, but which can stimulate commercial activity in general by providing a more vibrant, interesting and confident atmosphere in which to live and work.

Character Areas include:

- Cudjoe Head
- Salem
- St Johns
- St Peters

Development in these centres should take into account the village character and aim to preserve as far as possible, styles and examples of traditional architecture and the density and building height, range of shops or services and open space conducive to this character. In consultation with local communities the boundaries of these areas will be formally defined and a simple suite of policies, to be applied through the PPA (2002) will be developed and enforced.

Relevant character areas are further defined in *Section 7 – Local Area Plans*.

6.3.11 Industry and Storage

Not all developments require the applicant to undertake a full environmental impact assessment. However, the PDA must be able to respond effectively on a case by case basis to proposals for dirty or potentially polluting land-uses. Where an EIA is not required, an environmental screening note will be prepared by the Department of Environment. This applies to all developments described in Planning Policies IS1 to IS6 as part of the formal planning system to ensure appropriate mitigation measures are built into design. EIA and screening notes should take account of the cumulative effects of each development with other existing and planned developments.

Light industry includes activities such as agro-processing, manufacture of sand-based products and data storage facilities where extensive cooling is required. With the exception of limited and well managed sand mining it is not anticipated that heavy industrial activities will be economically viable or desirable in Montserrat.

Policy IS1 - Industrial development

Land has been allocated for light industrial development on the western coastal edge of Brades and Shinnlands. Subject to detailed master planning of the Carr's Bay area, light industry may also be accommodated to the east of the new port development.

Policy IS2 - Sand Mining

The Government has made a policy decision that sand mining activities should be based in the Belham Valley area for the foreseeable future and so long as other locations remain unsafe. This must be managed in such a way as to minimise the impact on the surrounding businesses and residential areas and on the environment. All sand mining operations will be undertaken in line with Government of Montserrat Health, Safety and Environmental Management Guidelines for Sand Mining with all extractive activities taking place no further west than the lower mining limit as defined in the LAP for Isles Bay, Belham Valley and Old Towne.

The removal of sand from beaches without the appropriate permits is forbidden in accordance with the Beach Protection Act (2002).

Policy IS3 – Quarry Location

There are several high profile problems with the location of the existing quarry located in Little Bay Ghaut. Subject to the implementation of a site rehabilitation plan, the quarry will close, releasing the site for development in accordance with Planning Policy IS1. A new quarry location will be identified subject to detailed technical and environmental studies.

In determining where development permission should be granted for a new quarry, in addition to the environmental impact of any new proposed quarry site, regard should be had for the opportunities for re-instatement of the landscape and after-use of the existing and the proposed quarries.

Policy IS4 - Value-adding sand based products

With the sand mining industry there are several opportunities for additional industries. Small scale value-adding enterprises such as tile manufacturing and block manufacturing can take place where raw materials are easily available. Land has been allocated in Brades and Carr's Bay for the location of such industry.

Policy IS5 - Water bottling plant

The springs of Montserrat produce a high quality water product and the extra capacity over local consumption mean that this can be bottled and exported for local and regional markets. Land is allocated in the north of Salem beside the Montserrat Secondary School for this purpose. The proximity of the school and other sensitive land uses require that the highest standards in environmental management are employed.

Additional locations are to be considered if necessary, subject to demand. See *Section 7.11 – Salem Local Area Plan* for further detail.

Policy IS6 - Agro-processing plant

GOM has identified that agro-processing should play a part in Montserrat's increasing economy. Small scale facilities can be established in a number of places subject to strict environmental controls and in accordance with the provisions of national environmental legislation. Recommended areas are in the industrial area of Brades, the upper parts of Dick Hill, Underwood Mountain and Friths.

Policy IS7 - Storage and warehousing

Land is allocated at the Carr's Bay port facility for storage space for local exports. See **Policy F2** for policy on fisherman's storage lockers and facilities.

Policy IS8 - Restricting industry in residential areas

Manufacturing industries and commercial activities causing a significant disturbance to residents through noise, dust, fumes or traffic will not usually be permitted in or adjacent to residential areas. Such developments will only be permitted in exceptional circumstances.

6.3.12 Office Space

Policy O1 - Government Offices

Land is allocated at Brades for the continuing presence of Government Headquarters. Mixed use commercial and retail space is also allocated at Little Bay for some government buildings and offices.

Policy O2 - Commercial Offices

As Montserrat's economy grows and opportunities for business grow based on the implementation of the economic drivers mentioned in *Section 3* of the Document, demand for commercial office space will increase. It is anticipated that a proportion of this economic growth will be financial services and IT enterprises which require a high standard of office space in an attractive and vibrant location.

Land is allocated for commercial offices at Brades, Little Bay and Gerald's.

Land is also allocated for mixed use residential, commercial and retail activities in each village centre. Full details are set out in *Section 7 – Local Area Plans*.

6.3.13 Retail Services

Policy RT1 - Central retail

Land is allocated at Brades and Little Bay for specialist retail services and consumer goods stores.

Policy RT2 - Local retail

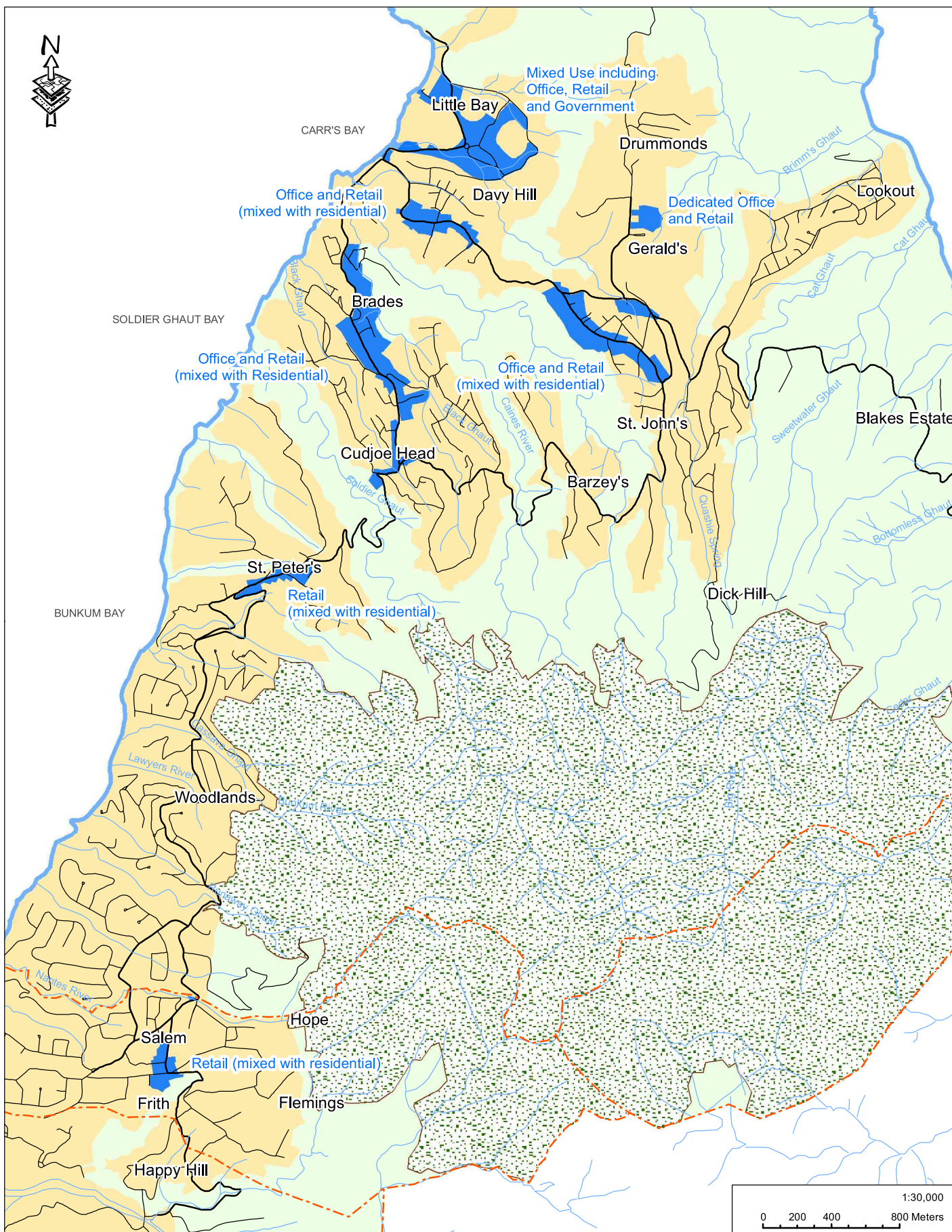
Small scale retail outlets are encouraged in all of the village centres to meet local demand and to reduce the need to travel to buy basic items. A strategy of decentralised retail will also ensure that not all retail facilities are critically affected by disasters. Local retail outlets will be permitted subject to satisfactory access, parking and delivery arrangements.

Policy RT3 - Supermarkets and large retail stores

Proposals for supermarkets and large retail stores will generally be encouraged within the centres of Brades and Little Bay and the local settlement areas. Proposals outside the centres of Brades and Little Bay will be considered on their individual merits.

Policy RT4 - Boutique retail

Land is allocated at Little Bay in the Boulevard area for boutique shops to cater for high end outlets.



GOVERNMENT OF MONTERRAT

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Legend

- Main Roads
- Minor Roads
- Rivers and Ghaunts
- Hazard Zones (2011)
- 2012-2022 LAP Areas
- Planned Commercial Emphasis (2012-2022)
- Protected Forest

Please Note: Commercial activity will be permitted in a wide range of areas subject to a case by case evaluation. Applications for commercial development in areas highlighted above will be encouraged

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Proposed Commercial
and Retail Pattern

January
2012

Figure 6.4

6.3.14 Road Transportation

Policy R1 – Balanced Development and Network Preservation

The overall strategy for road transportation is to develop the road network in a progressive manner to meet the needs of citizens, businesses and the emergency services. In the early part of the plan period efforts will concentrate on rehabilitating the A01 main road between Salem and St John's, and upgrading the secondary road network. Thereafter, consideration may be given to opening new roads associated with other developments, such as a new route between Little Bay to the airport via Drummonds and realignment and/or protection of the Carr's Bay road away from the beachfront where it is currently subject to erosion.

Proposed Road Links:

The following road links have been considered and may become necessary subject to increased population, traffic and demand for access to developable land. These links are illustrative only and proposed routes will subject to appropriate technical, environmental and economic feasibility/impact studies.

Little Bay to Drummonds: This short but effective link will provide a second route into Little Bay, will tie Gerald's and Drummonds to the facilities and services in Little Bay and Carr's Bay and will provide a second route between the port and the airport.

Drummonds to Lookout: Subject to population growth and traffic increases this route will provide a second route between Lookout and Drummonds, Gerald's and the Airport and on down to Little Bay.

Carr's Bay bypass: Subject to significant growth and increased activity at Carr's Bay there may be a need to divert traffic to the East of Carr's Bay and the port and new town area. This route would connect the main road in Sweeney's to the point just below the GOM HQ.

GOM HQ to Power Station: This short link will provide a second means of access and egress to GM HQ and for the police, fire and prison services.

Banks to Providence: This route will provide a secondary route across Soldier Ghaut taking pressure off Fogarty Hill, making Banks and Providence more accessible and providing an additional route in case of emergency.

Zion Hill loop: Subject to population growth and subsequent demand for land, this loop from behind the Gas Station to Cheap End will help to open up land around Zion Hill and St Peter's for residential and agricultural development.

Virgin Islands to St Peter's: Subject to population growth and subsequent demand for land, this route will open up land in this area as well as providing an additional through road in case of emergency.

MVO bypass: Subject to population growth and subsequent demand for land, this route will open up land for residential development in Hope as well as providing an additional route to the MVO in case of emergency.

Policy R2 – Road Network Preservation

Later in the plan attention will turn to repairing and upgrading secondary roads, particularly the road from St John's via Barzey's to Cudjoe Head and the road from Cudjoe Head to Nixons and Banks.

A road network is a vital and very expensive national asset that must be protected to avoid wasting public money on repairs occasioned by accelerated deterioration from inadequate maintenance. Capital expenditures on upgrading and rehabilitating existing roads and on providing new roads must be matched by policy commitments to provide sufficient recurrent budget allocations for timely and adequate *preventative* maintenance.

Axle load limits will be imposed according to relevant legislation

Policy R3 – Road Safety

Montserrat has, by and large, a very good road safety record with thankfully very few fatalities in the past decade. But, as the population grows and economic activity increases (including tourism and new local businesses/industries) there will be many more pedestrians, cyclists and vehicular road users. Newcomers to the island, and short-term visitors in particular, will not be used to the island's narrow roads with its steep gradients and blind bends. The upgrading of existing roads and provision of new roads will, as far as possible, provide for a safer network by improving alignments and making roadways wide enough for safe two-way traffic and pedestrian sidewalks. Street lighting will be provided where appropriate to enhance road safety. Pedestrian crossings with lights shall be provided where necessary.

The left-hand drive school buses pose a great danger for school children. Pick-up and drop-off points will be identified and designed for school buses to pull off the road so that school children can alight and disembark safely. These same stopping places should also be used by taxis and mini-buses.

Policy R4 – Gas Stations

The locations of the existing gas stations in lower St John's and St Peter's are to be preserved as strategic locations.

6.3.15 Air Transportation

Policy AP1 – Safeguarding land for future airport development

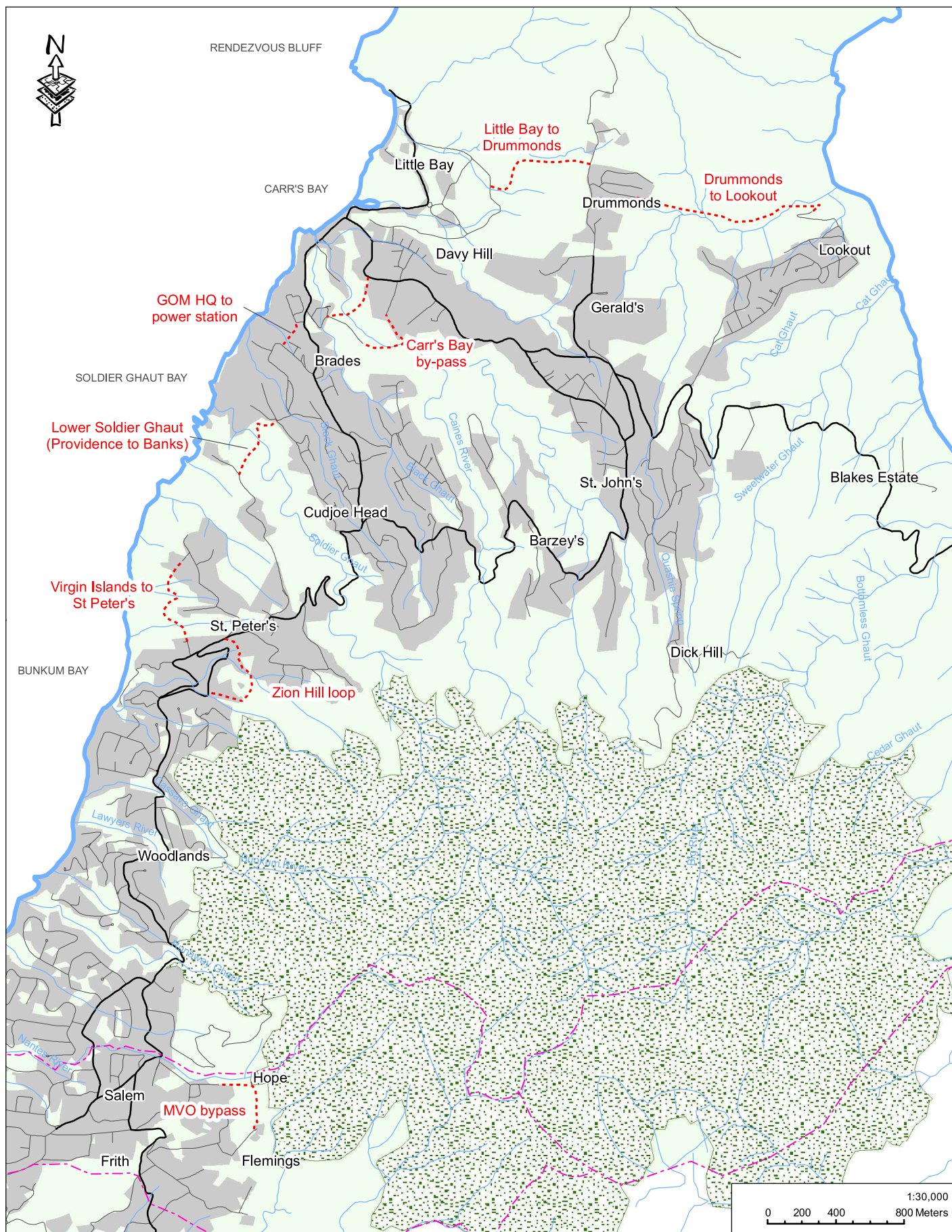
200 acres of land is to be safeguarded for possible future airport development at Thatch Valley and Old Quaw as indicated in Figure 6.1. This is the only option available to north Montserrat for the construction of a runway and associated infrastructure large enough to enable the operation of regional aircraft to/from Montserrat. The existing airport at Gerald's can support up to Twin Otter aircraft that extend air links beyond Antigua (which is all that the Islander aircraft can achieve), but a longer runway to accept Dash-8 aircraft would allow Montserrat to be linked into the wider regional air transport network. For economic and current travel demand reasons, this is unlikely to occur during the plan period but safeguarding the land from alternative development will ensure that this option remains open.

Alternative development proposals for this area are to be assessed on a case by case basis bearing in mind the possible aviation restrictions that a new airport would impose.

6.3.16 Sea Transportation

Policy ST1 – Passenger and Cargo Facilities

The current public ferry service will be improved and a breakwater and port will be designed to accommodate the larger ferry, as well as small to medium-sized cruise ships and cargo vessels. The port area will be redesigned to ensure the safe and efficient movement of passengers and freight.



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Legend

- Main Roads
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- Proposed Road Links
- Hazard Zones (2011)
- Rivers and Ghauts
- Protected Forest
- Built-up Area (2011)

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

Proposed Road Links

January
2012

Figure 6.5

6.3.17 Water Supplies

Policy WS1 – Safeguarding Water Supplies and Ensuring Storage Capacity

The development of commercial and residential properties, plus maritime activities at both Little Bay and Carr's Bay will place significant additional demand on the water supplies in these localities. Increased storage will be provided in the first part of the plan period, sufficient to meet the project needs up to 2022. Current water storage capacity in other areas is deemed adequate to meet projected demand, but this will be reviewed during the plan period in the light of actual commercial and light industrial developments in addition to increases in the number of dwellings in each area.

Appropriate consideration of adapting to effects of climate change will be taken into account in planning water infrastructure. This is to include an emphasis on watershed management and increased storage capacity.

Policy WS2 – Expanding the Water Distribution Network

Replacement of old distribution pipes will be made in a timely manner to minimise losses due to system leakages and to ensure quality of supplied water to consumers. New distribution lines will, wherever practicable, be placed alongside the roadways rather than under the road pavement in order to avoid future damage to Montserrat's road network for which there are limited funds for reinstatement of trenchworks.

6.3.18 Power Supplies

Policy PS1 – Providing Reliable Power from Geothermal Energy

Geothermal energy will be harnessed to provide a reliable, affordable and sustainable source of energy for producing electricity that also minimises carbon emissions. Site selection will consider possible adverse visual impacts of geothermal plant on surrounding areas and the potential for future development in this area once the level of volcanic activity permits.

Policy PS2 – Expanding the use of Renewable Sources

Solar panels for hot water at homes, government offices and businesses will be actively encouraged once suitable legislation is in place. Photovoltaic panels will be permitted, subject to being granted a license, in suitable situations to minimise the demand on mains electricity sources. Large-scale commercial solar and wind farms

that feed into the grid are not envisaged during the plan period, but applications will be considered, when appropriate, with regard to location, impact on the existing power system and the economic need with respect to the geothermal operations.

6.3.19 Wastewater

Policy WW1 – Introducing wider use of Communal Systems

The existing communal systems at Lookout and Davy Hill will be upgraded within the first few years of the plan. At the same time, the developments at Little Bay and Carr's Bay will incorporate communal systems that also cater to visiting vessels (yachts, cruise ships, etc). Elsewhere across the north of Montserrat, communal systems will be introduced where appropriate and economically viable. The management of individual septic tanks will be improved, including upgraded facilities for disposing and treating sludge.

6.3.20 Solid Waste Management

Policy SW1 –Solid Waste Management

The existing landfill facility at the New Windward Landfill Site will be retained for the safe storage of solid waste. The site will be upgraded, as far as practicable, in order to line at least part of the area to minimise leakage into the groundwater system. A cell system is likely to be introduced to provide for the separation and treatment of different waste streams. Arrangements will be made for the disposal of white goods and heavy items (old vehicles and large equipment).

Formal litter and garbage collection points shall be established in all village areas and as part of planning requirements for all new recreational and tourist developments.

Policy SW2 – Recycling and Reducing Waste to Landfill

Subject to the provisions of a formal waste management strategy, composting and recycling facilities will be provided at both the household and commercial level. The strategy should also outline provision for the safe disposal of hazardous waste.

Where appropriate, for larger scale developments, there is a presumption in favour of planning applications that can demonstrate the efficient use of construction materials and minimise construction waste to landfill and incorporate proposals for reducing, reusing and recycling waste.

6.3.21 Telecommunications

Policy TR1 – Enhanced Communications

Montserrat will be reconnected to the Caribbean regional telecommunications networks via two fibre-optic links, connecting with St Kitts and Guadeloupe. The private sector provider will roll-out G4 mobile communications across the island. Faster Internet broadband will be available to government, homes and businesses, in order to maximise Montserrat's potential for expanding business connections worldwide, to take advantage of video-conferencing and video-educational facilities, and to improve the communications between Montserratians at home and abroad.

6.3.22 Road Names and Building Numbers

In order to allow emergency services to find properties more rapidly and to keep the options open for courier and postal services, it is necessary to ensure that every road is officially named and that all buildings along each road are numbered.

Policy RHN1 – Road Naming

All roads are to be officially named and appropriately signed.

Policy RHN2 – Numbering of Buildings

A building numbering system is to be developed for all roads across north Montserrat. This is to include all types of building use, not just residential dwellings.

6.3.23 Environment and Conservation

Policy EC1 – Silver Hills Management Area

Subject to the provisions of **Policy AP1** there is a general presumption against development in the Silver Hills Area, as defined on Figure 6.1. Planning **Policies RL2, RL3, RL4, TE6, TE9** and **AG6** give priority in the Silver Hills to landscape conservation and enhancement, informal recreation and eco-tourism development.

Rendezvous Beach and Bay will be safeguarded as an area of outstanding natural beauty. Access will be maintained, improved for and restricted to pedestrians only.

Policy EC2 – Centre Hills

The Centre Hills are designated Protected Forest under the Forestry, Wildlife, National Parks and Protected Areas Ordinance 2002; the key springs and water catchments within the Protected Forest are also protected under the Water Authority Act (Under Part III, 17 (1)). Within this area no development will be permitted and the area will be managed in accordance with the Approved Management for the Centre Hills, maximising opportunities for the people of Montserrat to enjoy, learn and understand the dynamics of this important area. These opportunities will be enhanced by the provisions of **Policy TE7** which permits an innovative canopy walk.

There is a general presumption against new development within a 100 metre buffer of the Centre Hills boundary north of St Peters.

Policy EC3 – Pipers Pond

Pipers Pond has been identified as an area of important conservation value and has protected status. In developing the masterplan for Little Bay and Carr's Bay consideration will be given to the protected status of this area. There is a presumption in favour of restoring the natural functionality of the site, thereby retaining important wetland biota and providing a valuable recreational and educational resource for the people of Montserrat and the visiting tourist population.

Policy EC4 – Ghauts

It is recommended that all ghauts shown in Figure 2.2 are designated Conservation Areas under the Forestry, Wildlife, National Protected Areas Ordinance (Updated 2002). Conservation plans should be prepared jointly by the Department of Environment, Physical Planning Unit, Lands and Surveys and Public Works Department for each ghaut in a phased programme commencing with those most affected by extreme weather events and those of greatest environmental value and sensitivity. The designation process will be undertaken collaboratively with land-land owners, respecting their rights and emphasising their responsibility. The

conservation plans will demarcate a unique buffer zone for each ghaut in which development will be restricted.

Policy EC5 – Green Buffers

Notwithstanding the recommendations of ***Policy EC4*** there is a general presumption against development in the green buffer zones indicated in Figure 6.1. Maintaining these green arteries will play a critical role in preserving the unique character of the Montserratian landscape in manner consistent with ***Policy TE9***. In addition, by preventing de-vegetation in these areas and maintaining important natural water catchments this policy also forms part of wider national response to disaster risk reduction.

Policy EC6 – Northern Foothills of the Centre Hills

The northern foothills of the Centre Hills provide valuable habitat for the critically endangered and endemic plants, *Epidendrum Montserratense* (Montserrat Orchid) and *Rondeletia Buxifolia* (Pribby) and approximately 75 restricted range species. Development in these areas (as marked on Figure 2.2) shall not be approved until a site survey has been undertaken by the Department of Environment; plants will either be transplanted or protected in-situ.

Policy EC7 – East Coast Area

The East Coast Area, south of Look Out, but excluding the areas of Blakes Estate designated for Sports Tourism, is identified as an area of outstanding natural beauty with important areas of dry forest habitat. Development proposals in this area must include a commitment to maintaining at least 50 percent of the existing vegetative cover, preferably in contiguous blocks and must adhere to international best practice with respect to aesthetically sensitive and sustainable green building design. See Figure 6.1 for the designated East Coast Area boundary.

Policy EC8 – Historic Sites

Sites of historic interest are to be protected and restored wherever possible by the public or private sectors for tourist and educational use. It is proposed that the National Trust lead in the development of an updated Statutory List of heritage buildings and sites as a base reference for a programme of restoration, conservation and tourist development. The list will support the implementation of the requirements of the Physical Planning Act (2002).

Policy EC9 – Heritage Trails, Plaques and Signage

In line with the provision of ***Policy TE10*** and ***EC5***, the National Trust will lead in the development of a network of heritage trails in each of the main villages to encourage people to recognise the better points of vernacular architecture and the social history they embody. Historically important buildings shall be marked with a plaque (the National Trust to suggest the first tranche of sights).

Policy EC10 – Beaches and Coastal Setbacks

Beaches in Montserrat play an important recreational, economic and ecological function. In addition, the immediate coastal zone adjoining the beaches provides an important buffer between the ocean and coastal infrastructure within which the beach may expand or contract naturally. In Montserrat the beach and the vegetation above the high water mark in the coastal zone are protected under the provisions of the international Convention on the Protection of Migratory Species (CMS) for the habitat they provide for endangered nesting turtles, while the brackish waters of some beach areas provide habitat for many important species of migratory wading birds. The beach below the mean high water mark is also vested in the Crown.

Provision is, therefore, made for coastal setbacks which protect the beach and in which no development will be permitted and where restrictions on lighting (which affect turtle breeding) and noise generating activities will be employed.

Policy EC11 - Reducing the Vulnerability of Infrastructure to Natural Hazards

A decentralised approach to the provision of critical infrastructure will be adopted, such that the Government of Montserrat will not concentrate its public buildings and emergency services in one location.

The feasibility of locating utility service infrastructure underground will be pursued. Where appropriate this will be undertaken when upgrading utilities or rehabilitating services following damage.”

Policy EC12: Reducing Vulnerability to the effects of Climate Change

Although there is some uncertainty as to the likely effects of climate change on Montserrat, the balance of probability is that the island is likely to experience an increase in extreme weather events, while sea level rise and storm surge are also possible threats. Alongside the provision of ***Policies EC2, EC4 and EC5*** a precautionary approach to the location of infrastructure in low lying areas shall be adopted and the use of natural mitigation measures, including soft engineering, shall be employed.

SECTION 7

LOCAL AREA PLANS



7. Local Area Plans

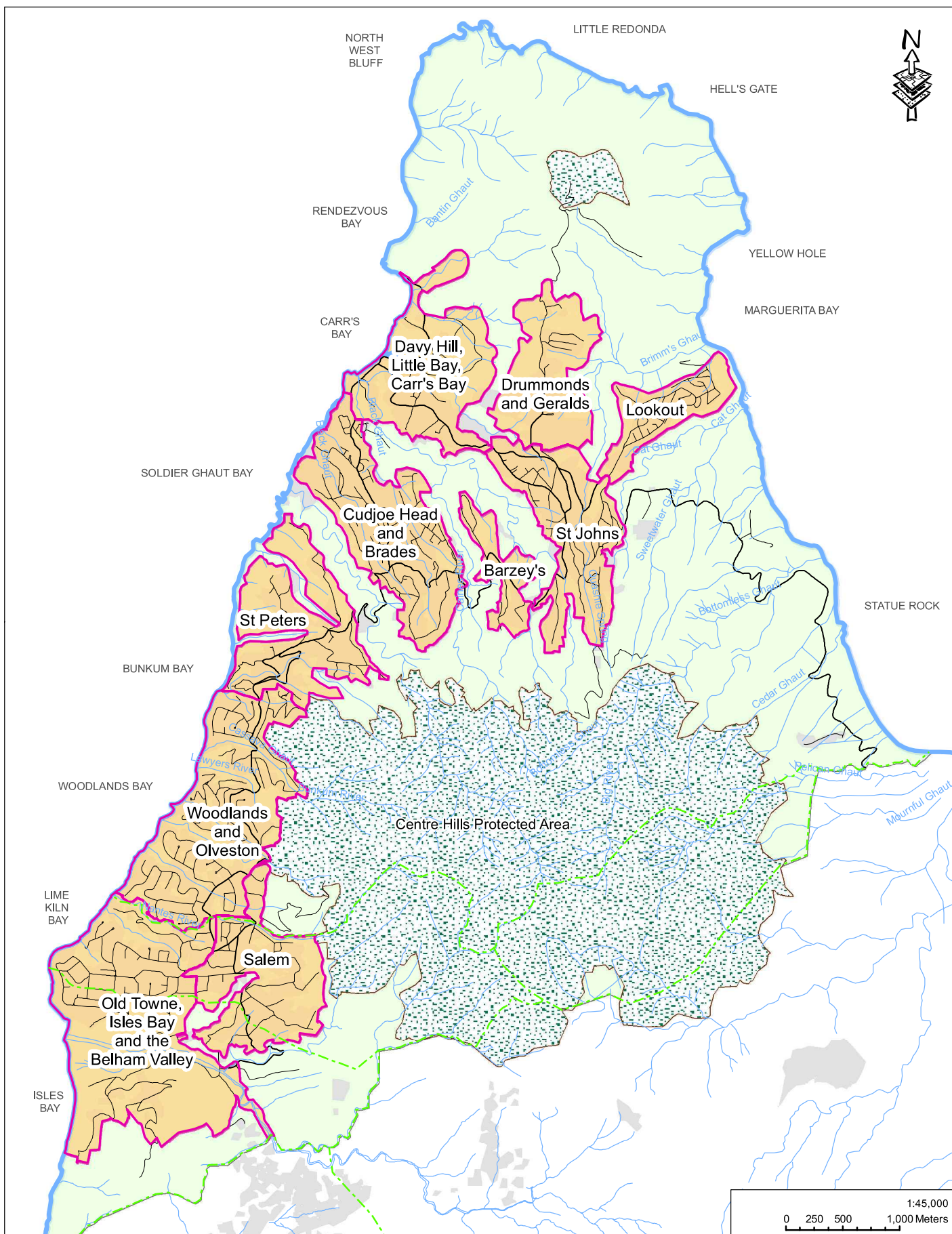
7.1 Introduction

While the previous section provides an overall land use zoning strategy and supporting policy for north Montserrat this section looks in detail at the main settlement areas around the island. Local Area Plans are set out for the following areas, as illustrated in Figure 7.1 and are organised in this section by location, from North East to South West.

- Lookout
- St John's (*including Dick Hill and Mongo Hill*)
- Barzey's
- Drummonds and Gerald's
- Davy Hill, Little Bay and Carr's Bay
- Cudjoe Head and Brades, (*including Cudjoe Head, Manjack, Baker Hill, Nixons, Banks and Shinnlands*)
- St Peters (*including Providence and Virgin Islands*)
- Woodlands and Olveston
- Salem (*including Friths, Flemings, Hope and Happy Hill*)
- Old Towne, Isles Bay and the Belham Valley

A concise Local Area Plan has been prepared for each of these areas with the following objectives:

- To provide an understanding of the current land use and infrastructure situation, current demographic trends and environmental and social conditions;
- To provide an understanding of community issues and concerns;
- To highlight which local facilities are lacking, what types of development are appropriate for each area and what capacity there is for certain types of future development;
- To set out the opportunities and constraints to future development;
- To outline the general strategy for the sustainable development of each area supported by a suite of detailed land use planning policies and infrastructure recommendations.



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Legend

- Main Roads
- Minor Roads
- Rivers and Ghauts
- Hazard Zones (2011)
- 2012-2022 LAP Boundaries
- Protected Forest

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Local Area Plan
Locations

January
2012

Figure 7.1

The Local Area Plans have been prepared in close consultation with the local communities. A description of the consultation process is available in *Appendix D*. The principles relating to implementing the LAP policy are set out in Section 7.2.

It should be noted that National Planning Policy in *Section 6* applies to all of north Montserrat. The policies and recommendations set out in the Local Area Plans provide additional policy specific to local areas but must be read in conjunction to the National Planning Policy.

7.2 Core Themes and Principles

There are some basic principles that should form the foundations of successful communities and sustainable socio-economic development in Montserrat.

A mix of land uses

A suitable mix of land uses including residential and commercial, retail and recreational is crucial to creating vibrant communities where people want to live, work and spend time. This creates opportunities for people to live close to their work place and to have easy access to local services and shops. This model of community development also reduces the need for car travel, reducing the pressure on the island's roads, increasing road safety and reducing carbon emissions and public spending on gasoline.

Community facilities

Supporting community needs and providing venues and facilities for recreation, learning, skills enhancement and general meetings and activities is seen as a key function of government (ref SDP). There is a need to provide appropriate community centres for each of the main communities in Montserrat. Community centres support the development, popularity and effectiveness of youth groups and special interest groups and foster community interaction and support. They also provide opportunities for community members to learn new skills in order to gain access to the job opportunities that will increase along with a more diverse economy, construction projects and increasing tourism.

A healthy and safe population

Local access to sports and recreation is crucial for the healthy development of Montserrat's population, for community events and for increased quality of life. There is an important need for public space in Montserrat for the full range of community and national events throughout the year. For example, St Patricks day

centre celebrations have recently been held in the centre of Salem where there is a suitable open area surrounded by bars and shops. Safe and stimulating playgrounds for smaller children are an important community facility.

Easy Movement and Access

Improving the movement and access network within and between communities will help to increase economic opportunities and access to services, community and recreational facilities. This means not just a more efficient road network, but safer pedestrian facilities such as walkways and pedestrian crossings. Pedestrian links between areas where there are no roads is also to be considered and can be provided as part of the access network.

Increasing access to bus transport is also important for sustainable community development. Providing proper bus shelters and lay-bys at strategic locations will make bus use easier and popular.

It is necessary to provide sufficient car parking where necessary to reduce road congestion and to encourage easy access.

Access to agriculture and back yard gardening

Agriculture is both an important source of local livelihoods and part of Montserrat's cultural heritage and identity. Efforts are made to ensure that there is sufficient agricultural land close to each community and that appropriate access and water infrastructure are in place. Housing density is also such that plot sizes are sufficient to enable back yard gardening

Environmental management

Quality of life and supporting livelihoods in Montserrat are closely connected to the identification and preservation of environmental assets. In line with the provisions of the PPA (2002) an Environmental Impact Assessment may be required for significant developments. The Local Area Plans provide a high level assessment of the environmental conditions of each area and guide development accordingly.

Celebrating cultural heritage

Preservation and enhancement of archaeology and built heritage is an important part of development in Montserrat. Cultural heritage forms a strong base for community identity and solidarity. It is also important for tourism development and related economic activity. Implementation of the Local Area plans should follow guidelines set out in PPA (2002).

Reducing the vulnerability to disaster

A central theme for the PDP is reduction of vulnerability to disaster. The natural hazards to which parts of Montserrat are susceptible are listed for each local area and an indication of the risk level and location is made. This must influence how certain developments should include appropriate mitigating measures.

The hazard levels in each Local Area are indicated for each hazard type. This is not an objective assessment, but risk is based on a number of reports (including Smith Warner 2003; UNDP 2010 and Ford 2011) as well as local knowledge and the aim is to raise awareness of the types of risk posing a threat to each area.

7.3 Lookout Local Area Plan

7.3.1 The Development Area and Existing Conditions

Lookout has expanded rapidly since 2000 through the construction of various housing projects on government owned land. It is now the largest single neighbourhood in Montserrat with a 2006 population of 583. The area comprises an extensive area of gently sloping land overlooking the east coast. The whole settlement straddles a high flat ridge and drainage is good. The landscape is rather bleak due in part to site clearance during the construction phases. There is a lack of medium to large trees and very few shrubs or bushes leaving the shallow soils prone to the strong erosional forces on the exposed east coast. Imported top soil has led to a proliferation of fire ants and damaging alien invertebrates.

Land Use and Social Infrastructure

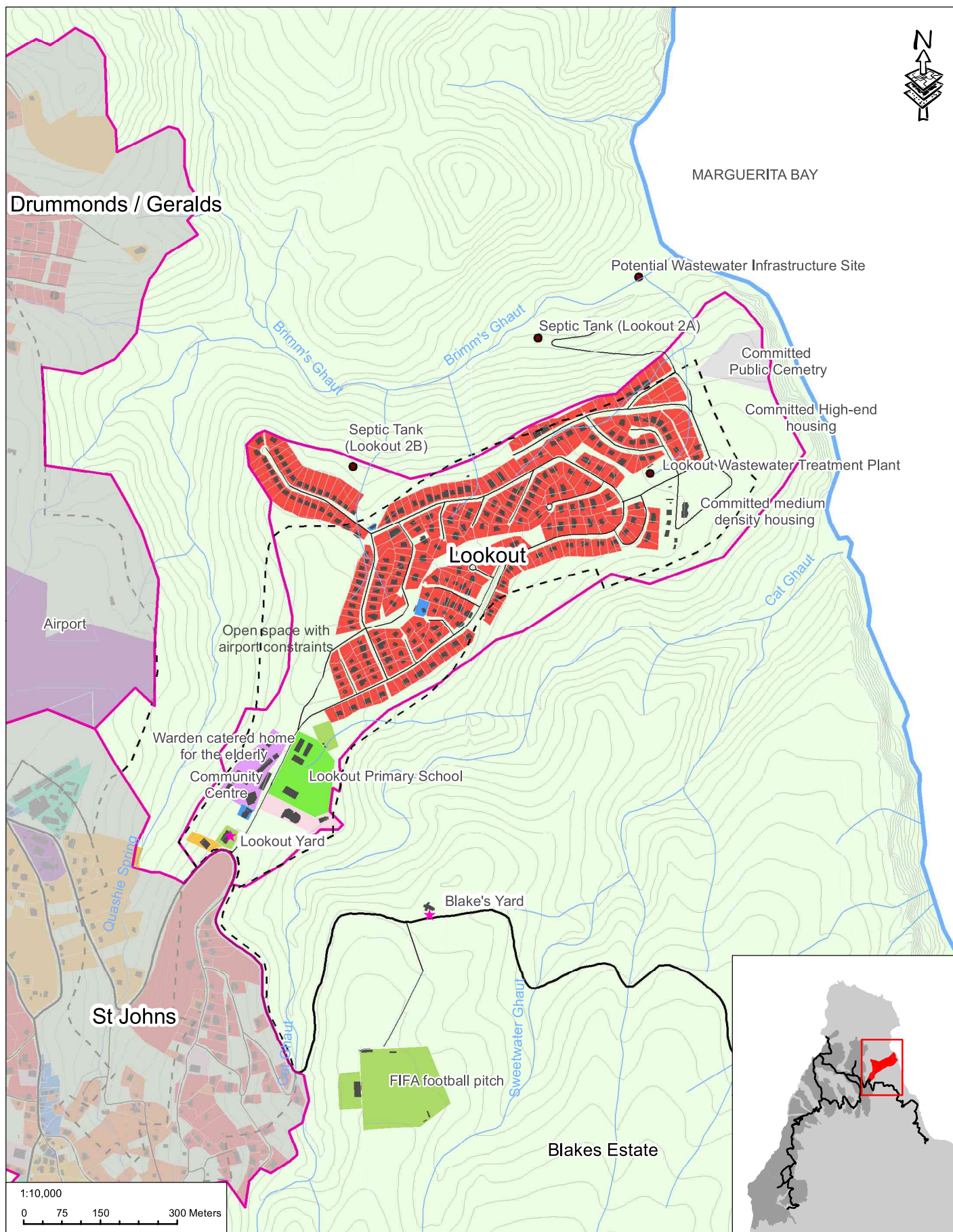
The Lookout LAP area covers 121 acres and the majority comprises high density housing. There are several medium density dwellings. The high density pattern of development is new in Montserrat and residents complain of lack of privacy and space. Lookout Primary School is located at the south west end of the settlement along with some limited recreational space for tennis, football and cricket and several commercial units. A narrow spine of open space runs down the centre of the settlement. Land use in 2011 is illustrated in Figure 7.2.

The majority of land is owned by the government and residents have the option of buying plots on a leasehold arrangement. There are limited privately owned areas, the exception being the western side facing the airport, currently open land with a restriction on development due to the airport flight path.

There is current a lack of recreation space and community facilities as described above; there is no clinic and the Min. of Health has stated that one is needed to serve the increasing population. The commercial area designated at the entrance of Lookout has not yet attracted any businesses and there remains a severe lack of shops and services in the settlement.

Infrastructure and Services

Access is currently sufficient to all parts of the settlement on a network of neighbourhood feeder roads. There are some issues with limited off-street parking. Lookout is relatively isolated from the rest of Montserrat and those without private transport use buses.



Lookout LAP

All parts of Lookout are provided with power and water. There are two communal septic tanks for Lookout settlements 2A and 2B and a central wastewater treatment plant. The wastewater plant has reached its peak flow limits; during heavy rainfall, storm water infiltration can lead to overtopping and a public health hazard to the houses below. A replacement location is being considered. The remaining dwellings have individual septic tanks or drain away systems.

Heritage and Environmental Features

Lookout is bordered by a ghaat to the north and the south which are rich ecological habitats and part of Montserrat's valuable water course network. The site itself has no significant environmental assets but has good views from most parts and an especially good view of the sea cliffs is available at the eastern end of the settlement. These attract tourism in the form of bird watchers.

Disaster Risk

The settlement is vulnerable to high winds, especially during the hurricane season and this is worsened due to the lack of trees and vegetation. The area is vulnerable to seismic activity and the northern and southern fringes of Lookout comprise steep slopes on which inappropriate development could be vulnerable to instability.

The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	General
Seismic	medium	General
Hurricane / high wind	medium	Tops of ridges and funnelled sloped facing east
Flooding	none	
Storm surge / tsunami	none	
Land slide / rockfall	low	Along slopes of Brimm's Ghaut and Cat Ghaut

7.3.3 Development Opportunities and Constraints

Opportunities:

- Approximately 23 acres are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- There are some limited opportunities for infilling existing residential areas where the existing dwellings are high density. There are also areas of land available to the far east of the settlement and along the southern fringes.

Lookout LAP

- There is a dedicated commercial development area near to the entrance of Lookout.
- Topography may constrain the type and density of residential development along the southern fringes.
- The western end of Lookout comprises open space overlooking Brimm's Ghaut. The majority of this area is not available for building development due to airport constraints but provides good opportunities for recreational or agricultural land.

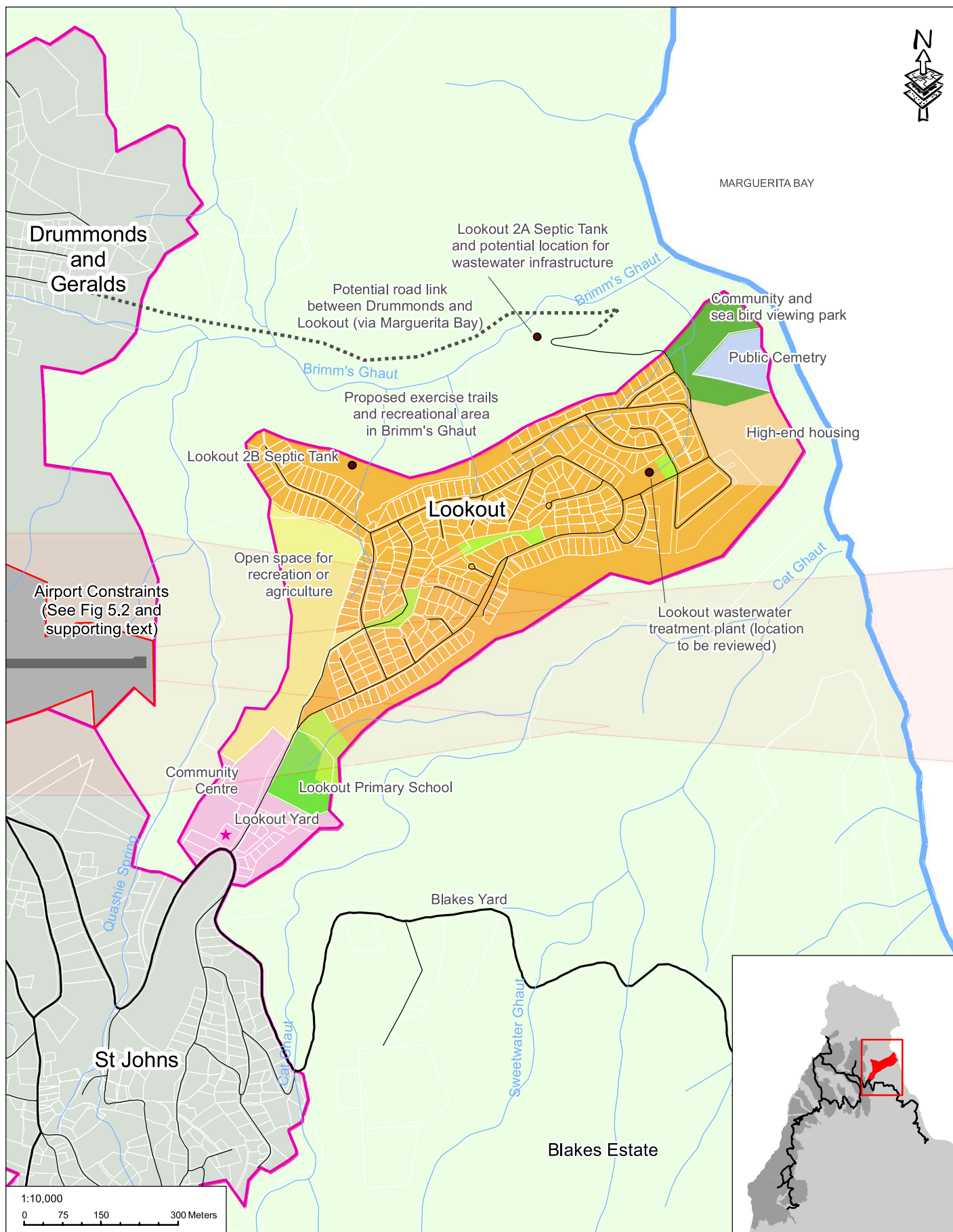
Constraints:

- There is committed development along south eastern fringe for medium density housing and proposed high-end housing at the far eastern end south of the committed public cemetery. Beyond these developments very limited space remains for residential development.
- Airport constraints and the need to reduce obstacles along the flight path must be considered for all new developments.
- Steep topography to the north and south of the settlement constrain further development of government owned land.

7.3.4 Policies and Proposals

General strategy

Lookout will continue to expand as a residential settlement. Based on population projections and land availability, Lookout can expand to a population of 700 by 2022, from a 2006 population of 583. It will mature and develop as an urban space. Vegetation will increase offering protection from wind, sun and surface run off. The commercial sector will increase in Lookout offering local access to basic items and local services. Community space for leisure, recreation and sports will increase and where possible residential dwellings will be added to the fringes of the area.



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Legend

- Main Roads
- - - Minor Roads
- - - Proposed Road Links
- Rivers and Ghauts
- ★ Heritage Sites
- 2012-2022 LAP Boundaries

Land Use Zones

- Predominantly Residential
- Residential (High-end)
- Community and Recreation
- Primary School
- Agriculture / Recreational
- Cemetery
- Community Park
- Recreation
- Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Lookout Land Use Zones

January
2012

Figure 7.3

Policies

Policy LAP1.1 - Additional recreational facilities are to be provided including some open grass for informal cricket and football and a multipurpose hard court.

Policy LAP1.2 - Residential growth should comprise a mixture of medium and low density housing around the eastern and southern fringes.

Policy LAP1.3 - Increased commercial units are to be accommodated in Lookout, especially within residential areas towards the centre of the settlement where they will be accessible to the greatest number of residents.

Policy LAP1.4 - Land is allocated for a small community park around the committed public cemetery. This will offer some open community space with stunning views and as a place for bird watching with views of coastal cliffs. The community park will also act as a buffer between the cemetery and residential units.

Policy LAP1.5 - Vegetation in the park area should be selected to offer an appropriate wind buffer for the eastern part of the settlement.

Policy LAP1.6 - The open space along the centre of Lookout, indicated in Figure 7.3 is to be appropriately landscaped and preserved as open space for sports and recreation.

Policy LAP1.7 - A suitable site is to be found for a local clinic. This should include an apartment close by or attached for the duty nurse accommodation.

Policy LAP1.8 - A fenced pasture area is to be considered along the western side of the settlement to reduce the number of freely roaming livestock, and in line with national *Policy A5*.

Infrastructure and Service Proposals

- The existing wastewater treatment plant is to be appropriately maintained to reduce the risk of mal-function and over-topping. An alternative location is to be considered.

7.4 St John's Local Area Plan

7.4.1 The Development Area and Existing Conditions

The St John's area extends from Sweeney's and the airport in the north to Dick Hill and Judy Piece in the south east and Mongo Hill in the south west. This is an area that stretches almost to the fringes of the Centre Hills. As with much development in north Montserrat the settlement has built up along the ridge lines. More recent development has occurred on steeper slopes beyond the ridge lines.

The area includes several steeply sloping areas and vegetation has been generally reduced in concentration in relation to other settlement areas. This is due to a high concentration of residential and agricultural land use.

Land Use and Social Infrastructure

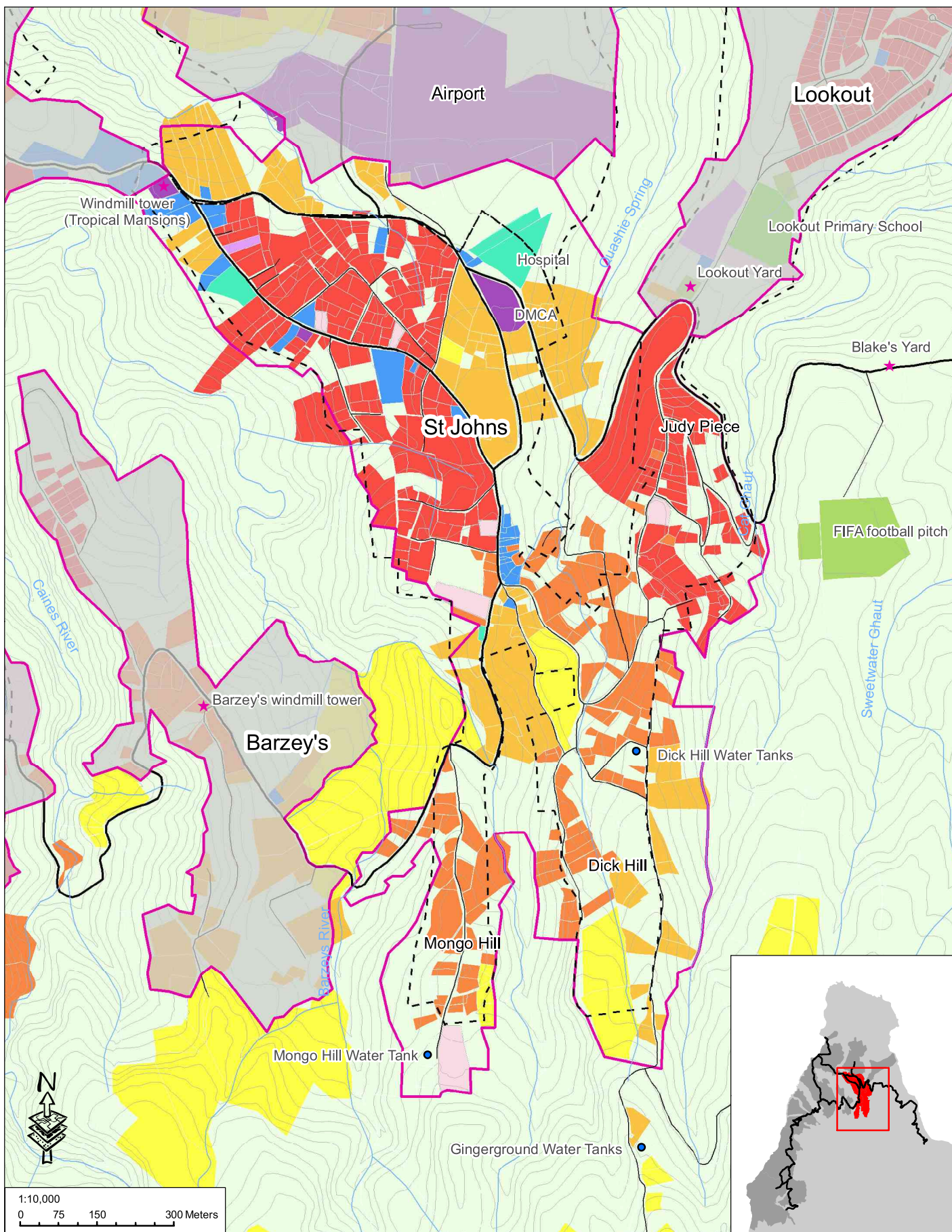
The St John's LAP area covers 272 acres and baseline land use is illustrated in Figure 7.4. The main centre runs in a linear arrangement along the road leading south. This accommodates several bars and restaurants, churches, a dental clinic, and several small shops. A secondary centre has developed along the western extent of the area in lower St John's. This currently accommodates a petrol station, the LIME offices, ZJB Radio Montserrat and the Tropical Mansions hotel as well as several shops and services. St Johns also accommodates the DMCA and the Glendon Hospital.

Housing along the main roads is generally high to medium density and constructed with a range of materials and quality. Land is generally privately owned and highly fragmented.

There is a severe lack of recreational facilities in the local area. The development of the John A. Osborne airport displaced St John's and Gerald's local sports facilities and they have not been replaced. There are currently plans underway to construct a community centre and multipurpose hard court as indicated in Figure 7.5.

Infrastructure and Services

St John's is at the easternmost end of the A02 road which connects to Brades and Salem. Access is possible through a network of side roads to Barzey's, Mongo Hill, Dick Hill, Judy Piece and Lookout.



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Legend

- | | | |
|----------------------------|--------------------|---------------------------------|
| — Main Roads | Existing Land Use | Education |
| — Minor Roads | Res High Density | Health |
| — Rivers and Ghauts | Res Medium Density | Social Care |
| ★ Heritage Sites | Res Low Density | Community, Recreation and Sport |
| — 2012-202 AAP Boundaries | Commercial | Religious |
| — 2000-2009 AAP Boundaries | Government | Industrial |
| | Agriculture | Vegetation |

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSEERRAT
2012-2022

St John's
Existing Situation (2011)

January
2012

Figure 7.4

Roads are generally very narrow and on-street parking exacerbates the access problems and danger for pedestrians. The existing parking and turning situation is a notable concern with many dwellings and businesses lacking appropriate parking facilities. The Judy Piece access road behind the Methodist church is currently impassable during heavy rain.

All parts of the area have access to the mains water supply and the power network.

Heritage and Environmental features

There are no significant environmental assets in the area. The ghauts are of ecological importance as are all ghauts in north Montserrat.

Disaster Risk

The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	General
Seismic	medium	General
Hurricane / high wind	medium	Tops of ridges and funnelled sloped facing east
Flooding	low	Run-off on slopes and where ghauts cross roads
Storm surge / tsunami	none	
Land slide / rockfall	medium	Steep slopes

7.4.3 Development Opportunities and Constraints

Opportunities:

- Approximately 70 acres are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- There are limited opportunities for infilling residential development although there are greater opportunities for further residential development at Dick Hill and Mongo Hill.
- There is potential for consolidation and further development of the commercial centre in lower St John's.

Constraints:

- There are no significant development areas in the St John's LAP area. Furthermore, potential for infilling is restricted.

- Topography limits growth in many undeveloped areas and in such cases can be preserved as agricultural land.
- Many areas lack all weather access roads. Existing unpaved roads are generally rutted and difficult for many vehicles.
- One of the greatest concerns in the St John's settlement area is land ownership and the stagnation of the land market. This is due not to a lack of demand but rather a lack of willingness to sell or lease to those who are not from the north of Montserrat or who are not friends or family. Land is a valuable commodity but unless efforts are made to influence attitudes in this regard, unwillingness to sell or develop land may continue to be a constraint to sustainable growth.

7.4.4 Policies and Proposals

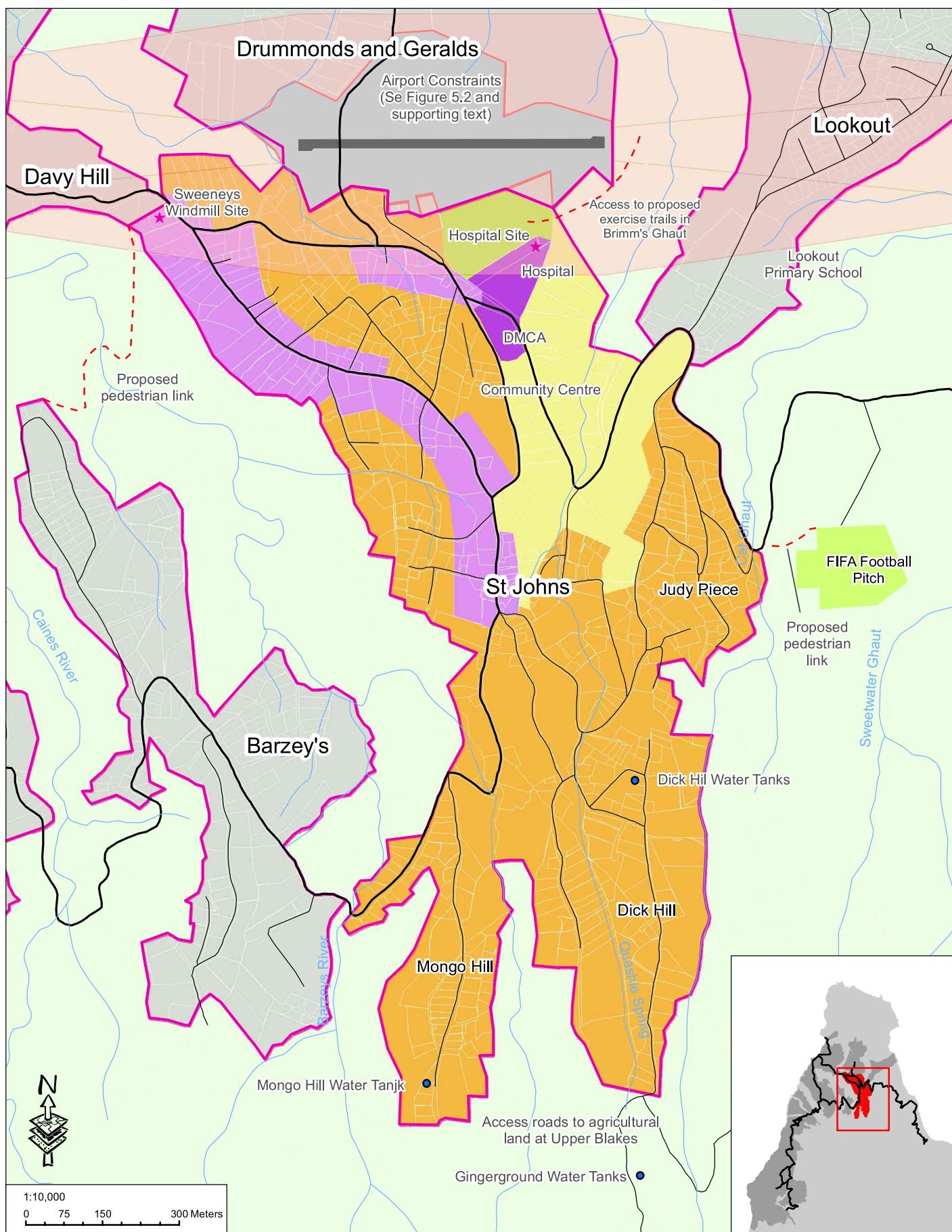
General Strategy

St John's is an important village centre and includes a significant amount of the island's existing residential development. Residential development should continue to be encouraged in this area although the potential for infilling is more limited in many areas. Based on population projections and land availability, the area can expand from a 2006 population of 480 to a population of 860 by 2022. Dick Hill and Mongo Hill will absorb a larger proportion of residential development as well as some agricultural homesteads comprising dwellings with larger agricultural plots. The commercial centre including the A&F gas station should continue to grow in amount and diversity of services and shops. The southern commercial centre should remain as a centre of bars and restaurants, retaining its architectural charm and heritage.

Policies

Policy LAP 2.1 - Medium to high density mixed use commercial and residential infilling is encouraged throughout the area as indicated in Figure 7.5. Residential development is particularly encouraged in Dick Hill and Mongo Hill.

Policy LAP 2.2 – The commercial centre at the road junction by the gas station is to be maintained and consolidated, encouraging a greater range of services and shops. Residential units are also to be permitted as appropriate.



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Legend

— Main Roads
— Minor Roads

- - - Proposed Pedestrian Links
— Rivers and Ghauts
2012-2022 LAP Boundaries
★ Heritage Sites

Land Use Zones

Predominantly Residential
Agricultural (grazing)
Residential / Commercial
Predominantly Agricultural Homesteads
Hospital and DMCA
Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

**St John's
Land Use Zones**

January
2012

Figure 7.5

Policy LAP 2.3 - Adequate parking must be provided along the main road through St John's. All new developments must conform to the parking standards set out in the *Development Standards* in *Section 8*.

Policy LAP 2.4 - Land is allocated for a community centre as indicated in Figure 7.5.

Policy LAP 2.5 - Land is allocated for agricultural and pasture land, as indicated in Figure 7.5.

Policy LAP 2.6 – The architectural heritage and character of the southern commercial centre including the bars and restaurants is of value to local society and for Montserrat's tourism. As stated in national **Policy TE10**, the centre of St John's is to be designated a character area such that its protection and enhancement will stimulate a vibrant cultural area.

Policy LAP 2.7 - Development in Level Piece is not to extend over the ridge line overlooking Barzey's in order to minimise visual impact.

Infrastructure and Service Proposals

- Access roads to Dick Hill and Judy Piece are to be paved and appropriately maintained.
- Agricultural access roads south of Dick Hill are to be upgraded and appropriately paved.
- Consideration is to be given to pedestrian access along more dangerous parts of the main roads through St John's.
- Consideration is to be given to a more direct pedestrian link to the FIFA football pitch, as indicated in Figure 7.5.

7.5 Barzey's Local Area Plan

7.5.1 The Development Area and Existing Conditions

Barzey's has until recently been an agricultural area with limited residential dwellings. The area has become a focus of residential development activity due to some large plots of land being subdivided for sale as residential plots. As such the Barzey's area is likely to experience relatively high rates of residential growth and it is important that the land use of the area is considered so that access is sufficient for the population level, the right community services are provided and that appropriate environmental and disaster risk precautions are taken.

Land Use and Social Infrastructure

Barzey's LAP area covers 82 acres and current land use comprises residential and agricultural land as well as vegetation. There is one small souvenir shop on the through road. See Figure 7.6 for an illustration of current land use.

The land is all privately owned and several land owners own the majority of land in Barzey's. Much of this land is subdivided for residential plots.

Infrastructure and Services

Barzey's is accessible via a secondary road that runs between St John's and Cudjoe Head. This is narrow and has precipitous edges in some places. Access to much of the Barzey's area off the main road is via unpaved roads that are susceptible to erosion.

Water and electricity are provided to all existing dwellings. Wastewater is processed by septic tanks individual to each unit. The area has good telecoms but poor access to satellite TV.

Barzey's is not serviced by the existing bus and taxi network.

There is no house to house or communal waste collection facility. Residents must take refuse to a central point in St John's where it is picked up by a waste contractor and transported to the New Windward landfill site.

Heritage and Environmental Features

Barzey's is on the northern fringes of the protected forest area and comprises areas of steeply sloping land as well as some limited areas of flatter land. The area

generally has good views over the north of Montserrat and the Silver Hills. The area experiences considerable runoff and drainage can be an issue. There are two significant ghauts bordering the settlement area, Barzey's River to the east and Caines River to the west.

Currently the majority of the area is vegetated with trees, bushes and open grassland. There are localised pockets of important ecological significance and restricted range plant species including the Montserrat Pribby, (*Rondeletia Buxifolia*). The riparian strips that define each of the ghauts are ecological hotspots, supporting many types of flora and fauna; they also perform a valuable drainage and water management function. Surface water run-off into the Caines River discharges into Carr's Bay.

Charcoal burning further south along the Caines River brings smoke to residential areas.

Disaster Risk

The area is steeply sloping in many areas and potentially susceptible to land slips and rockfall. It is vulnerable to the effects of seismic activity, perhaps more so than many other settlement areas, due to the steep topography. It also experiences high wind speeds, especially during the hurricane season

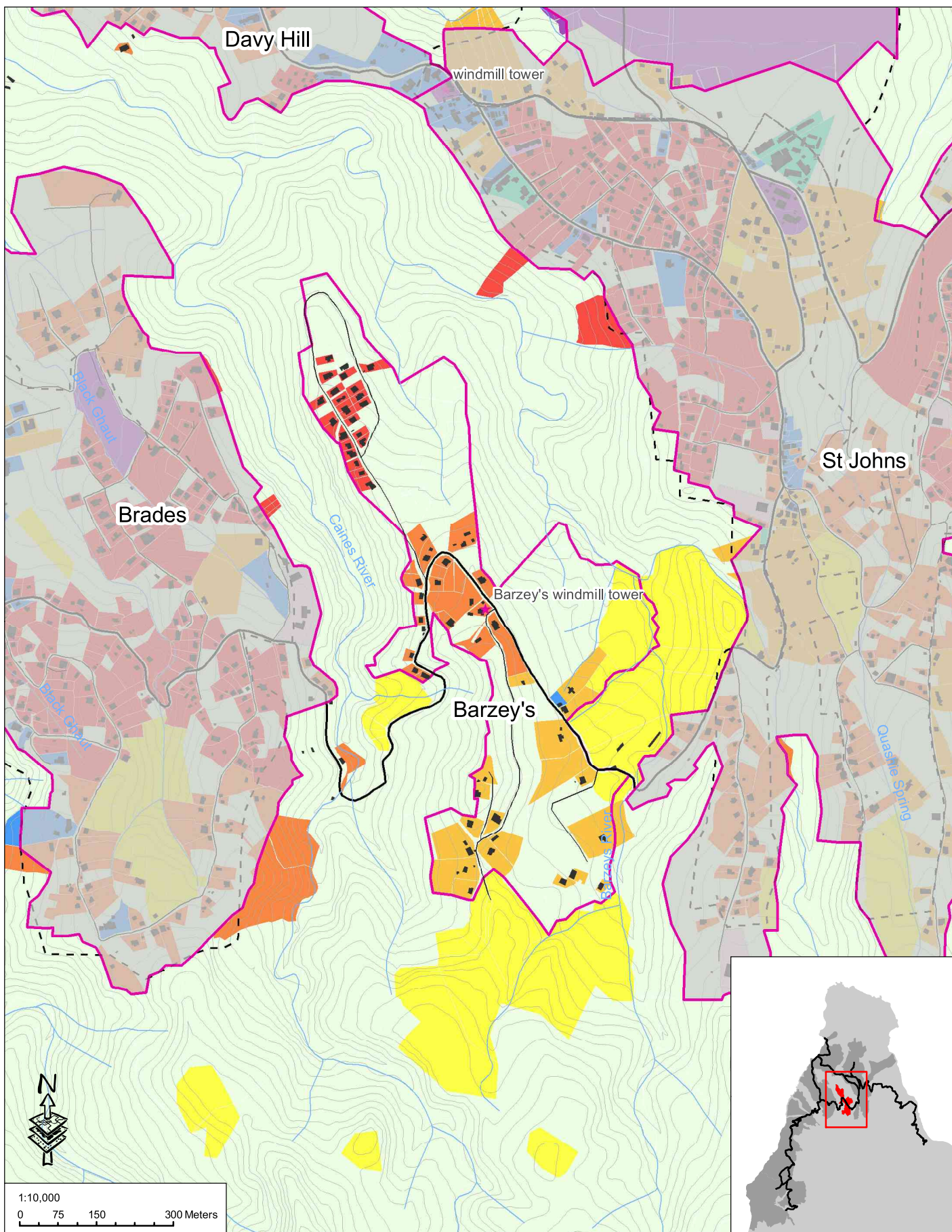
The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	General
Seismic	medium	General
Hurricane / high wind	medium	Particularly tops of ridges and funnelled slopes facing east
Flooding	low	Run-off on slopes and where ghauts cross roads
Storm surge / tsunami	none	
Land slide / rockfall	medium	Steep topography in many areas

7.5.3 Development Opportunities and Constraints

Opportunities:

- Approximately 64 acres are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- Significant opportunities for new residential development. Approximately 50 subdivided plots were available for sale in 2011.



PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

Barzey's Community
Existing Situation (2011)

January
2012

Figure 7.6

Barzey's LAP

Existing residential areas have capacity for residential infilling and some potential for organised pastoral grazing.

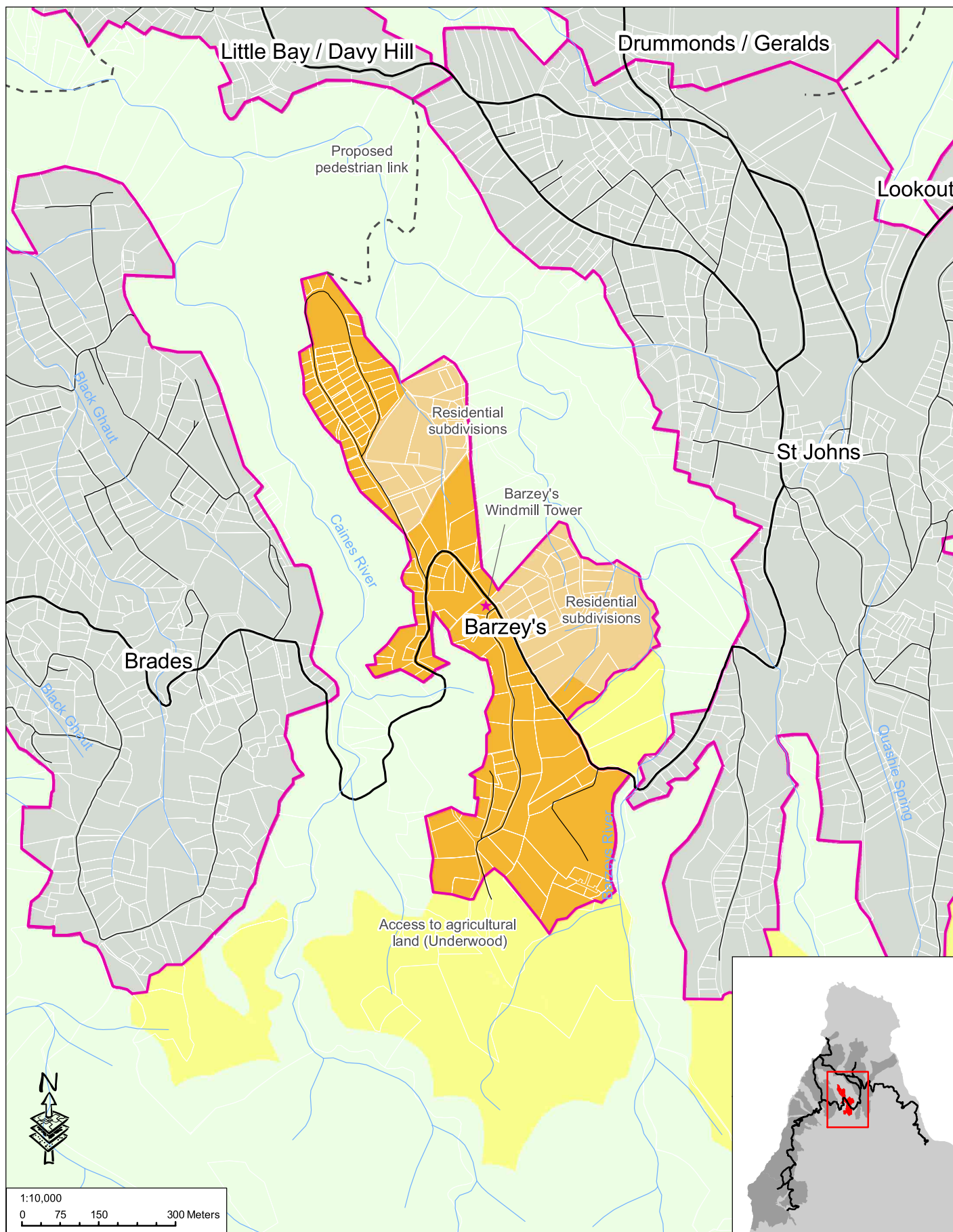
Constraints:

- the under-engineered and poor state of maintenance of the main access road between St John's and Cudjoe Head;
- steep topography across much of the Barzey's area which will require carefully engineered structures and limits potential for recreational open space;
- ecologically significant riparian strips along ghauts which must be retained;
- the presence of internationally important range restricted and endemic plant species;
- the increased risk of localised and downstream flooding at Carr's Bay associated with greater and accelerated levels of surface water run-off arising from a potential increase in impermeable surfacing;
- covenants that are in place for some of the subdivisions which constrain the size of lots and the activities permitted.

7.5.4 Policies and Proposals

General Strategy

Barzey's will grow as a residential area and based on population projections and land availability, the area is likely to expand from a 2006 population of 90 to a population of 200 by 2022. Residential areas are to be encouraged at low to medium density with many of the currently subdivided plots measuring around a quarter to a sixth of an acre. If possible, recreational facilities should be included in development if suitable land can be allocated. Key residential sites are the subdivisions identified in Figure 7.7. Due to the close proximity of St John's and Cudjoe Head there is no need for a commercial centre.



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Ministry of Agriculture, Land,
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Legend

- Main Roads
- Minor Roads
- Rivers and Ghauts
- 2012-2022 LAP Boundaries
- ★ Heritage Sites

Land Use Zones

- Predominantly Residential
- Residential Subdivisions
- Agricultural Area
- Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

Barzey's
Land Use Zones

January
2012

Figure 7.7

Policies

Policy LAP3.1 - A medium to low density pattern of residential development is to be encouraged. Commercial land use is to be permitted subject to evaluation of proposals on a case by case basis.

Policy LAP3.2 - In areas of steep topography it is important to maintain vegetation cover above 50% to avoid run-off leading to soil erosion and ground instability. Vegetation is to be cleared in a manner appropriate to the stability of the plot and in line with the provisions of National Planning **Policy EC6** which makes provision for an ecological site survey by the Department of Environment.

Policy LAP3.3 - The topography of each plot will be assessed on a case by case basis and appropriate hard and soft engineering measures implemented to mitigate the danger of slope destabilisation.

Policy LAP3.4 - Dwelling plots that extend into the ghauts must take into account National Planning **Policy EC4** which designates all ghauts conservation areas. Development activity that has a negative impact on a ghaut will not be permitted.

Policy LAP3.5 – Land is to be allocated for pastoral grazing as required for local demand and in negotiation with interested land owners.

Policy LAP3.6 - Farming activities must not threaten the integrity of the water courses and the quality of water. Livestock and poultry must be kept separate from and must not be in concentrated groups within close proximity to the Ghaut. This is to protect the quality of the recharge aquifer at the western extent of Caines River.

Infrastructure and Service Proposals

- The B01 road between Cudjoe Head and St John's must be widened such that it is suitable for two way traffic along the entire length. Safety barriers are to be erected in areas where there is a precipitous edge. Vegetation is to be well maintained to enhance visibility and access.
- Waste collections are to be implemented for the Barzey's area.
- Barzey's is a relatively isolated community and should be included on a scheduled bus transport network as this becomes available across the island.

7.6 Geralds and Drummonds Local Area Plan

7.6.1 The Development Area and Existing Conditions

Since the development of the John A. Osborne airport the settlement of Geralds has been significantly reduced in size and for planning purposes Geralds and Drummonds are considered as one settlement area. The area is the northernmost settlement in Montserrat and is bordered by the Silver Hills in the north. The Geralds area has gently rolling topography and some extensive areas of flat land. The Drummonds area has more steeply sloping topography in places but there is a significant amount of gently sloping land suitable for various land uses. The settlement area is the source of Brimm's Ghaut.

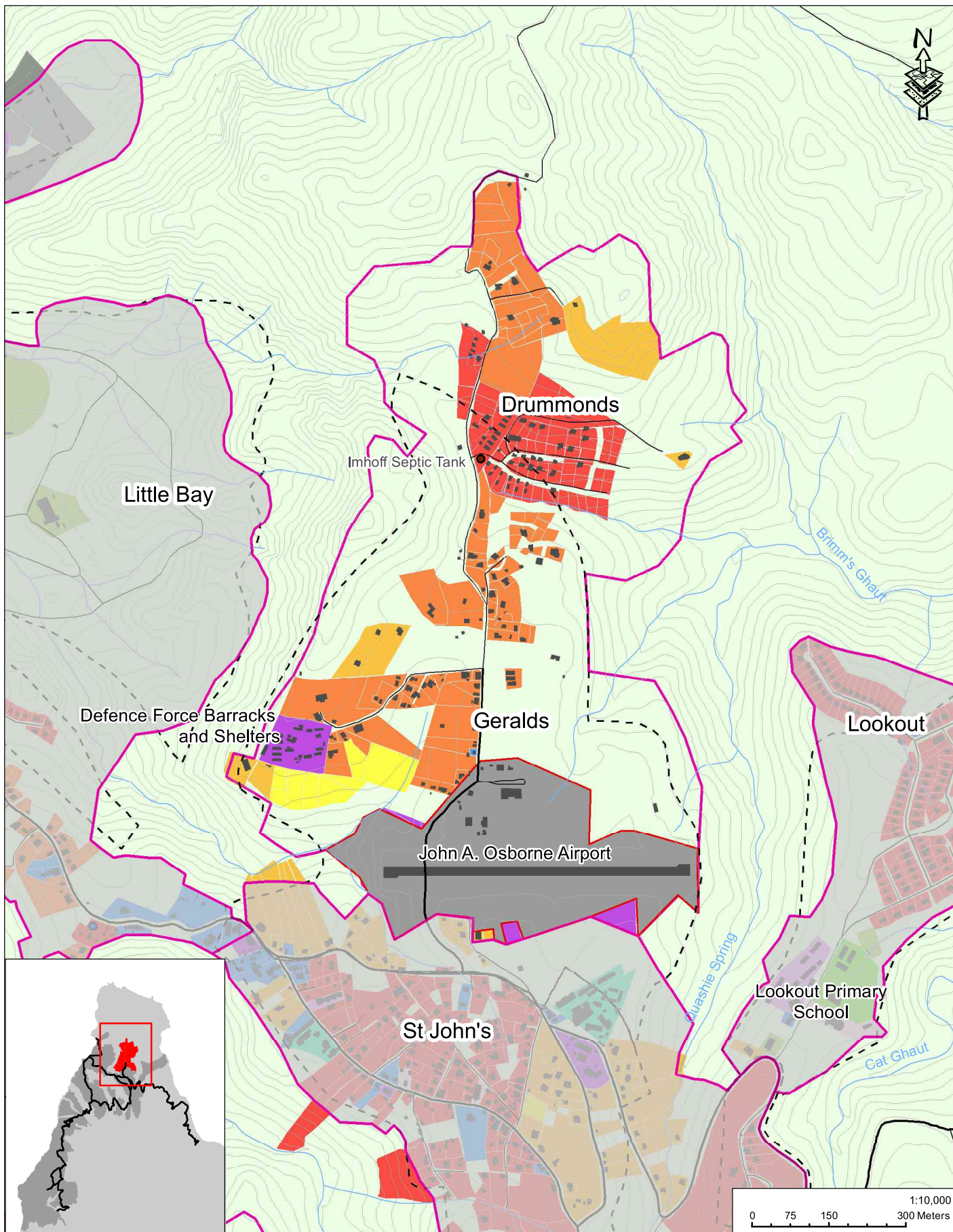
Much of the settlement area comprises open grass and scrubland. There are very few mature trees.

Land Use and Social Infrastructure

The Geralds and Drummonds LAP area of 220 acres comprise a mix of high and medium density residential dwellings. The Montserrat Defence Force site occupies a small area in the west. This includes post-emergency shelters with a combined capacity of 250 persons. There are several retail units in the southern end of the settlement area including a small grocery shop. There is some fenced pastureland overlooking Brimm's Ghaut to the east. The construction of the airport at Drummonds replaced a well-used cricket oval; there has been no recreational or sports facility in the area since. This emerging community has no community centre or place for people to gather, or hold meetings. In addition there are no education, health or religious facilities in the area. Figure 7.8 illustrates the existing land use and development layout.

The majority of land is privately owned. There are several land owners who own significant parts of the settlement area, especially in the Geralds area. The government owns the land on which the airport is based.

In 2011 Drummonds accommodated the majority of households in social housing – 19 living in 8 shared double wooden units and 3 single units.



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Legend

- 2012-2022 LAP Boundaries
- Rivers and Ghauts
- Main Roads
- Minor Roads
- 2000-2009 LAP Boundaries

Existing Land Use

- Res High Density
- Res Medium Density
- Res Low Density
- Commercial
- Government
- Agriculture

- Education
- Health
- Social Care
- CRS
- Religious
- Industrial
- Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

**Gerald's and Drummonds
Existing Situation (2011)**

January
2012

Figure 7.8

Infrastructure and Services

Access to the Gerald's / Drummonds area is on one road only, via the airport tunnel. There is no second egress to emerging developments at Little Bay or connectivity to Lookout. The airport road continues as the main access road through the area with only one of two paved feeder roads leading into residential areas. There are several unpaved feeder roads. May parts of the area do not have access roads or service infrastructure.

All residential units are currently provided with electricity and water. Wastewater is collected in individual septic tanks and there are no communal sewerage systems. The communal septic tank intended for a group of public funded housing in Drummonds is not functional

Heritage and Environmental Features

A shallow soil base, combined with degradation of the vegetative base through overgrazing and the effects of loose and feral livestock, leaves the area particularly vulnerable to the erosional effects of wind and rain. Loose and feral livestock are also constraining backyard farming. The area contains one of the few fenced formal grazing areas but this is privately owned.

Disaster Risk

The area is vulnerable to high wind speeds, especially during the hurricane season and is vulnerable to seismic activity. Parts of the settlement area are vulnerable to the risk of slope instability.

The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	General
Seismic	medium	General
Hurricane / high wind	medium	Tops of ridges and funnelled sloped facing east
Flooding	low	Source of Brimm's Ghaut and severe run-off in Drummonds
Storm surge / tsunami	none	
Land slide / rockfall	medium	Along slopes of Brimm's Ghaut

7.6.3 Development Opportunities and Constraints

Opportunities:

- Approximately 100 acres are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- The area has strong potential for residential infilling as well as many larger undeveloped areas suitable for residential subdivision and alternative land use such as commercial office and retail space.
- The area of flat land adjacent to the airport is particularly suitable for recreational, commercial or retail activity.
- Many parts of Geralds and Drummonds have extensive views and parts of east Geralds in particular have spectacular views over Brimm's Ghaut and towards Antigua. This is suitable for tourism development and high end residential development.
- There is a waterlogged area at the start of Brimm's Ghaut valley which, while not suitable for residential development, could be better drained to provide a small area of development land for recreation (hard court or similar).
- Pasture Piece has been identified as a potential site for the MSS if relocated (DFID 2008).
- A proposed road between Drummonds and Little Bay will provide further opportunities for development at the eastern end of this link and will provide easy access to facilities for residents of all these areas.

Constraints:

- Airport constraints (as explained in *Section 5*).
- Increasingly steep topography at the fringes of the developable area.
- Visual impacts of development in the north of Drummonds must be considered with respect to the Silver Hills landscape.
- Visual impact of development along the west of Geralds must be considered with respect to the Little Bay landscape.

- Loose and feral livestock present a severe problem for natural vegetation and local produce, as across much of north Montserrat
- There is limited access and utilities across much of the area.

7.6.4 Policies and Proposals

General Strategy

Geralds and Drummonds will continue to expand as residential areas. Based on population projections and land availability, the area can expand from a 2006 population of 212 to a population of 400 by 2022. Residential growth should be encouraged in the full extent of the settlement area. The southern areas are constrained by the airport and flight path regulations. There is potential for a mixed use office and commercial unit complex just north of the airport which will support local economic activity. Community and recreational facilities should be incorporated into new development.

Policies

Policy LAP4.1 - Medium to high density housing is encouraged throughout Geralds and Drummonds as indicated in Figure 7.9.

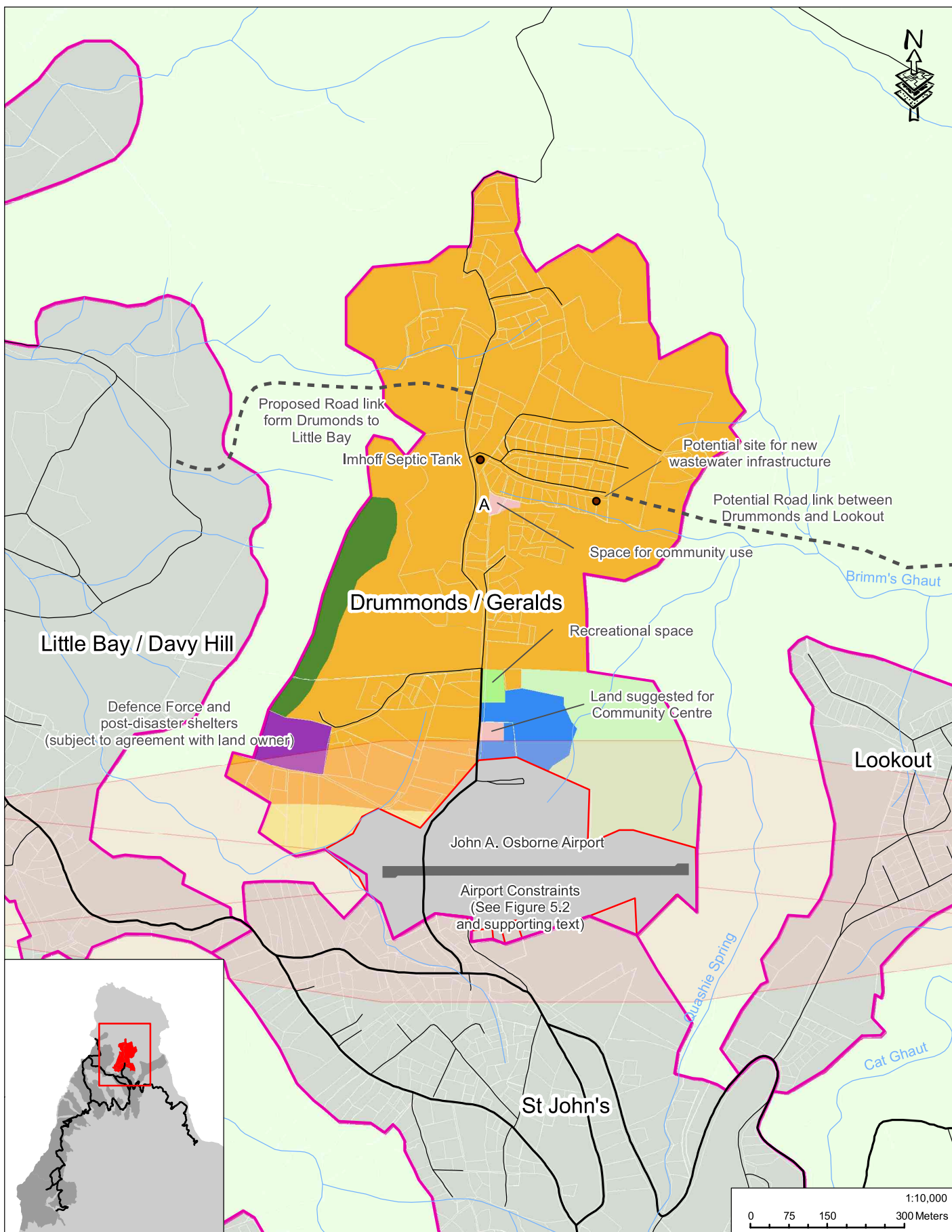
Policy LAP4.2 - A Community Centre should be developed on part of the flat land adjacent to the airport. This should include a play area for small children and a multi-purpose hard court for recreational use.

Policy LAP4.3 - Land is allocated for a grass recreation area as indicated on Figure 7.9, suitable for informal cricket and football.

Policy LAP4.4 - Commercial office and retail space is to be encouraged on the flat land just north of the airport. This should exemplify the principle of mixed use development, including food and drink outlets if appropriate.

Policy LAP4.5 - Sufficient parking must be allocated for the airport, the proposed community centre, and the mixed use office and retail area in line with the *Development Standards* in Section 8.

Policy LAP4.6 - Land is designated for fenced pasture land in the south east part of Geralds so as to conform to the airport constraints.



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Legend

- Main Roads
 - Minor Roads
 - - - Proposed Road Links
 - Rivers and Ghauts
 - 2012-2022 LAP Boundaries
- Land Use Zones**
- Predominantly Residential
 - Predominantly Commercial/Offices
 - Fenced Pasture Land
 - Protected Ridge Line
 - Community use
 - Defence Force
 - Recreation
 - Agricultural
 - Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Geralds and Drummonds Land Use Zones

January
2012

Figure 7.9

Policy LAP4.7 - Land is allocated as agricultural land in the south west area of Geralds so as to conform to the airport constraints.

Policy LAP4.8 - The Defence Force land is to be maintained for Defence Force training and post disaster accommodation, subject to negotiation with the landlord. Accommodation blocks are to be upgraded to provide temporary accommodation appropriate for emergency use as well as for low cost visitor accommodation.

Policy LAP4.9 - Ensuring favourable first impressions for new arrivals to Montserrat should be a priority. As such, land around the airport and access roads is to be attractively maintained.

Policy LAP4.10 - There is a presumption against development along the ridge line between Geralds and Little Bay north of the Defence Force barracks, as indicated in Figure 7.9. The ridge line provides a visually attractive backdrop from Little Bay when looking east, as well as to the Geralds area when looking from the airport. Development proposals must minimise their visual impact on the surrounding area.

Policy LAP4.11 - The planned use of Vetiver Grass to control erosional processes will be promoted throughout the plan area. This is especially important in Drummonds.

Infrastructure and Service Proposals

- Appropriate storm water drainage is to be implemented to mitigate the effects of severe surface run-off experienced during storms.
- Access to exercise trails in Brimm's Ghaut is to be provided between from Geralds and/or Drummonds as appropriate and in consultation with land owners.
- Appropriate drainage of the area indicated by Point A in Figure 7.9 is required in order to allow the development of a suitable community or recreational facility.
- Consideration should be given for a road linking Lookout to Drummonds. Concepts must be discussed in consultation with land owners.
- Consideration is to be given to the implementation of upgraded communal sewage treatment infrastructure throughout the LAP area.
- Consideration must be given to security arrangements at the airport regarding access to airport infrastructure from the entrance roundabout.

7.7 Little Bay, Carr's Bay and Davy Hill Local Area Plan

7.7.1 The Development Area and Existing Conditions

The Little Bay, Carr's Bay and Davy Hill area is to become the new capital and economic centre of Montserrat together with the existing government headquarters and commercial centre in Brades.

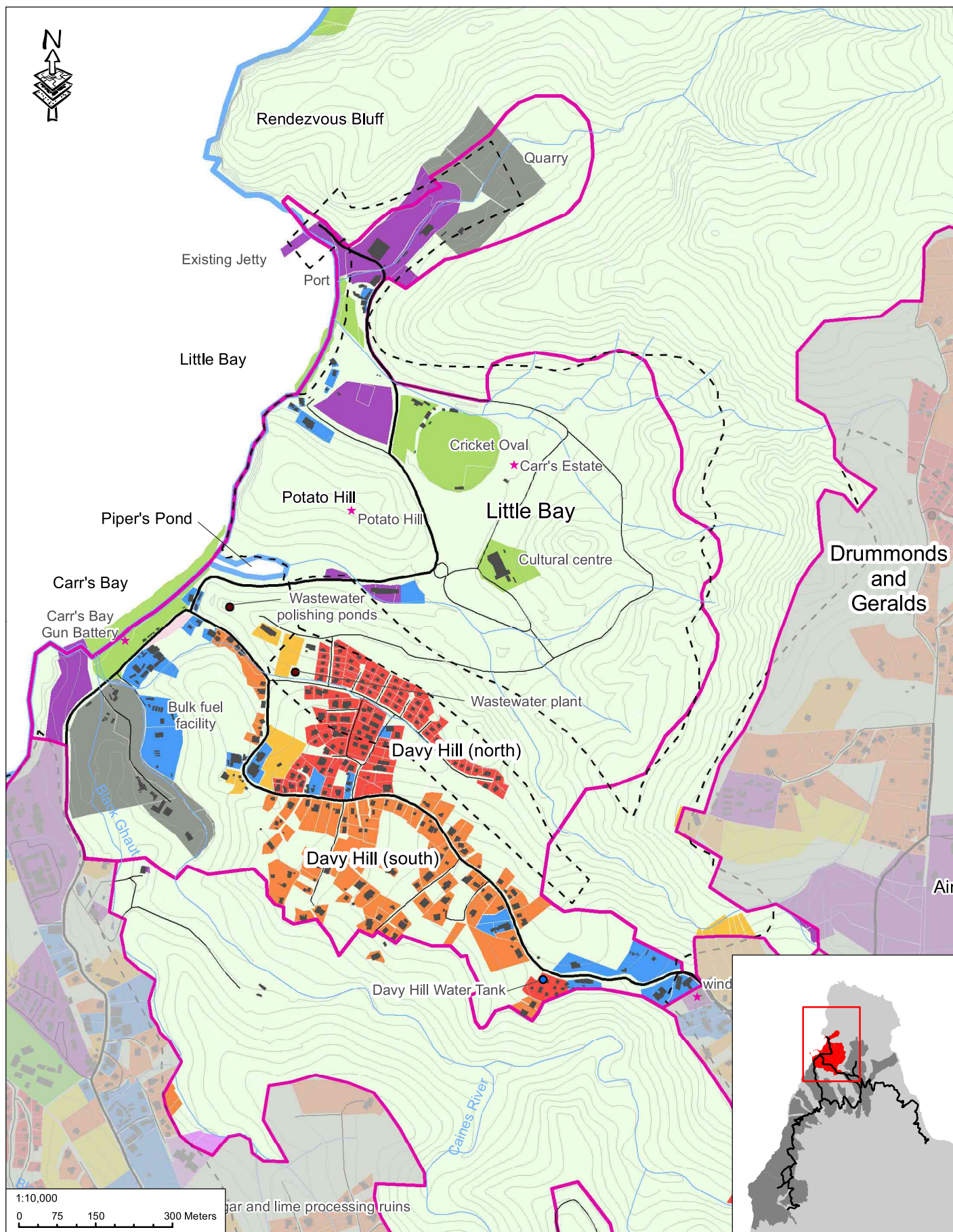
The area is of high environmental and landscape significance comprising the beachfronts of Carr's Bay, Little Bay and Rendezvous Bay with the backdrop of the Silver Hills. The site is topographically challenging with a range of flat and gently sloping land, small hills and steep slopes. Several significant ghauts drain through the area, which combine with a high local water table to cause difficulties with surface run-off (leading to flooding and erosion) and the depositing of silt in the bays. The site is well vegetated in many areas. However, large tracts of land in Little Bay have been cleared for building and to facilitate infrastructure provision at the rear of the site. Many of the sloping areas are vegetated with low trees and scrubland.

Davy Hill occupies the southern part of the Little Bay settlement area. Although the two areas are in close proximity, Potato Hill brings a degree of physical separation from Little Bay. Davy Hill contends with a number of socio-economic related problems and is one of the most depressed areas in Montserrat in terms of access to employment and community facilities. It is estimated that unemployment is around 60% and many households are in the low income bracket.

Land Use and Social Infrastructure

The LAP area covers 350 acres and current land use is illustrated in Figure 7.10. There is a mix of residential, commercial, industrial, recreation and cultural facilities in the site. The Little Bay beachfront has a collection of beach bars and restaurants along with dive shops. The existing jetty occupies the northern part of Little Bay and an aggregate quarry and industrial area occupies the valley north of the port. The Montserrat Cultural Centre is located towards the rear (east) of the Little Bay site and a new market with first floor office space has been recently constructed near the entrance to Little Bay.

Little Bay has historically been important as a recreational and cultural facility and is where the activities of local fishermen were transferred in the post-1995 era.



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Legend

- | | | |
|----------------------------|--------------------|---------------------------------|
| — Main Roads | Existing Land Use | Education |
| — Minor Roads | Res High Density | Health |
| — Rivers and Ghauts | Res Medium Density | Social Care |
| ★ Heritage Sites | Res Low Density | Community, Recreation and Sport |
| — 2012-2022 LAP Boundaries | Commercial | Religious |
| — 2000-2009 LAP Boundaries | Government | Industrial |
| | Agriculture | Vegetation |

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERAT
2012-2022

**Davy Hill, Little Bay
and Carr's Bay
Existing Situation (2011)**

January
2012

Figure 7.10

Davy Hill comprises high and medium density housing with some commercial services, mostly along the main road. Davy Hill has the highest concentration of government owned social housing on Montserrat, comprising 11 family units on government leased lands.

There is a lack of recreational facilities in Davy Hill and young children often play sports and games in the street. Residents don't usually make the journey to Little Bay to use the cricket pitch. Recreational space is a priority need for the community. The Davy Hill area also requires a Community Centre and this is proposed by GOM to be constructed in 2012.

Carr's Bay has an attractive beach, behind which is low lying ground which accommodates the bulk fuel facility, several businesses and some industrial activity. As with Little Bay, Carr's Bay is important for local fisherman, and important facilities including storage lockers are located at the northern end of the Bay.

The Little Bay estate is government owned including the northern part of Davy Hill. Some plots along the Little Bay beachfront are privately owned. Rendezvous Beach is government owned and the valley behind the beach is privately owned. The waterfront at Carr's Bay and the land accommodating the bulk fuel facility is government owned. The remainder of the land at Carr's Bay is privately owned. There is a government owned cemetery at Carr's Bay across the road from the beachfront.

Infrastructure Services

A network of access roads has been prepared in Little Bay as part of the Phase 1 infrastructure works which took place in 2009-2010. Davy Hill has a network of narrow and steep roads which can be dangerous. Traffic calming measures are required on the main street in Davy Hill. The main A01 road passes through the Carr's Bay area where it is vulnerable to flooding.

The Little Bay Phase 1 infrastructure works also installed power and water ducts at the rear of the Little Bay site. Sewage disposal infrastructure has not yet been implemented.

All built-up areas of Davy Hill, Carr's Bay and the waterfront area of Little Bay have access to power and water supplies. There is a community wastewater treatment plant for Davy Hill. Wastewater for the other areas is disposed of by septic tank. The Davy Hill Plant has excess capacity, but constraints on peak flow. Any overtopping of the system, would contaminate soils, enter the sea and present a public health problem to nearby properties.

There will be a need for public services such as a clinic and a fire station as Little Bay develops. Little Bay is to become a tourism hub as well as an economic centre. There is a need for appropriate facilities for families and children and to ensure that the attractive surrounding landscape is not compromised by development.

The marina proposed in the Little Bay master plan (MDC 2009) is not feasible in the proposed location at the foot of Potato Hill due to vessel manoeuvrability issues around the proposed breakwater. An alternative location is required.

Heritage and Environmental Features

The coastal zone provides a range of important habitat for sea and terrestrial bird species; a colony of Fruit Bats roost off Little Bay Bluff; a flock of Cattle Egrets nest at Carr's Bay; pelicans and tropic birds are among numerous species that utilise the cliffs and bluffs, while waders, herons and marsh birds can be found in the wetland areas around Carr's Bay and the protected mangrove area at Pipers Pond.

The marine environment has been badly degraded. Extensive clearance of the natural vegetation in Little Bay combined with river training works and the concrete lining of drainage channels and culverts have all contributed to extensive surface water run-off at Little Bay and significant sedimentation effects on corals. Poor quarry management and stock piling of sands have exacerbated these problems. In 2011, Little Bay provides a case study in poor environmental management. Beach areas at Little Bay and Carr's Bay see marine Turtles nest between July and September (mostly Green Turtles).

The Caines and Collins Rivers which discharge into Carr's Bay are another source of sediment deposit; the seawater in the bay becomes brown after heavy rain as sediment-carrying surface waters flow from a number of upland ghauts converge.

The bay areas' contain a number of important historic sites. The Carr's Estate at Little Bay is the well known historical plantation site of Captain William Carr. The site is enclosed by a modern fence and the property belongs to the Montserrat National Trust, which will integrate the remains into the new museum complex. At Potato Hill there are the remains of 18th and 19th Century historical structures, with evidence of possible prehistoric settlement on the hill. An iconic 18th Century cannon defence battery is located at Carr's Bay. This significant historical site is under imminent threat from coastal erosion, and from the corrosive nature of salty coastal air on iron.

Disaster Risk

The lower parts of Little Bay are vulnerable to storm surge and tsunami. There is a severe risk from flooding and storm surge to the critical infrastructure of the bulk fuel facility and the A01 road at Carr's Bay.

The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	General
Seismic	medium	General
Hurricane / high wind	medium	Tops of ridges and funnelled sloped facing east
Flooding	high	Carr's Bay and lower parts of Little Bay
Storm surge / tsunami	high	Carr's Bay and lower parts of Little Bay
Land slide / rockfall	low	Steep slopes around Little Bay

7.7.3 Development Opportunities and Constraints

Opportunities:

- Approximately 31 acres in Davy Hill, 36 acres in Carr's Bay and 130 acres in Little Bay are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- In Davy Hill (north) there is an area of unused land of around 1.5 acres which is government owned. Part of this could be allocated as recreational area.
- In the Davy Hill (south) area and up the main road to the St John's LAP area there are opportunities for residential infilling. There are also opportunities for several commercial developments.
- The Little Bay Estate provides an excellent development prospect for a mix of commercial, tourism, recreational and government land uses. There are also areas behind the existing port suitable for light industrial use or as a boat yard.
- The low-lying area around Carr's Bay is constrained by flood and storm surge risk. Development of this area as a port, with suitable flood protection to the immediate hinterland area would provide significant business opportunities, while also making best use of this generally low-lying and flood prone area.

- Little Bay has played an important recreational and cultural role in the post-1995 era. The principles of social inclusion in planning and implementation of developments in this area will help continue the process of redevelopment while creating a new capital town for Montserratians.

Constraints:

- Uncontrolled development could have disastrous consequences for the area – in social and economic terms. Future development must consider visual impact as a core planning parameter.
- Facilities for local fisherman must be included in the developed site.
- Existing sitting tenants should be involved in the development process where possible.
- Pipers Pond and the adjacent slope of Potato Hill is a legally protected conservation area and suitable consideration must be given when developing this area;
- Beach front habitat is protected by the International Convention on the Conservation of Migratory Species of Wild Animals (CMS) which includes migratory species of turtles and birds.
- Important archaeological remains are present on Potato Hill and the Carr's Bay Battery is a designated historic landmark.

7.7.4 Policies and Proposals

General Strategy

Based on population projections and land availability, the area could expand from a 2006 population of 793 to a population of 1,750 by 2022. Little Bay and Carr's Bay will be developed to create a new economic and cultural centre and capital town for Montserrat. As a major addition to Montserrat's infrastructure, a port is to be constructed at Carr's Bay. This will accommodate small cruise-ships, cargo vessels, the ferry and some visiting yachts. The new quayside along Carr's Bay would be developed as the new town's waterfront, providing local business opportunities by way of shops, cafés, and so on. This waterfront would extend northwards by way of reclaimed land to the seaward end of Piper's Pond where the concept of the "Evergreen Roundabout" (from Plymouth) could be recreated. The existing beach at the end of Pipers Pond is expected to extend against the breakwater wall due to build up of wave-transported sand. While much of Piper's Pond would be infilled to

create an area upon which the new town would be built, the valuable mangrove areas would be incorporated into a small ecological park at base of Potato Hill. The new town would extend from here eastwards to the new market. This inland part of the development will be mixed use comprising commercial and retail space, government offices, bars, restaurants, tourism services and low-density residential areas. The cricket ground would be enhanced by way of amphitheatre seating that would serve cricket spectators and double as seating for recreational events (concerts, sports days, etc) on the cricket field. A small memorial park may be included, adjacent to the cricket pitch if possible.

Closer to the waterfront in Little Bay, a high-end resort will be constructed, including a hotel at the former "Festival Village" area and hotel-serviced residences and related commercial activity on Potato Hill. The existing jetty at Little Bay is to be developed into a yacht marina, with a boatyard and boat repair facility in the Little Bay Ghaut area, creating a potentially significant new business opportunity. The requirements of local fishing vessels and fishermen's facilities will be incorporated in development of this area.

It is important to integrate Davy Hill into the successful development of Little Bay and Carr's Bay. A guesthouse and/or restaurant may be developed at the west end of Davy Hill. Economic benefits and job opportunities must benefit the community at Davy Hill for the long term social development and sustainability of the area. This can be achieved through spatial planning and with the consideration of how skills and information can be transferred to the local population to enable them to have access to the expanded jobs market.

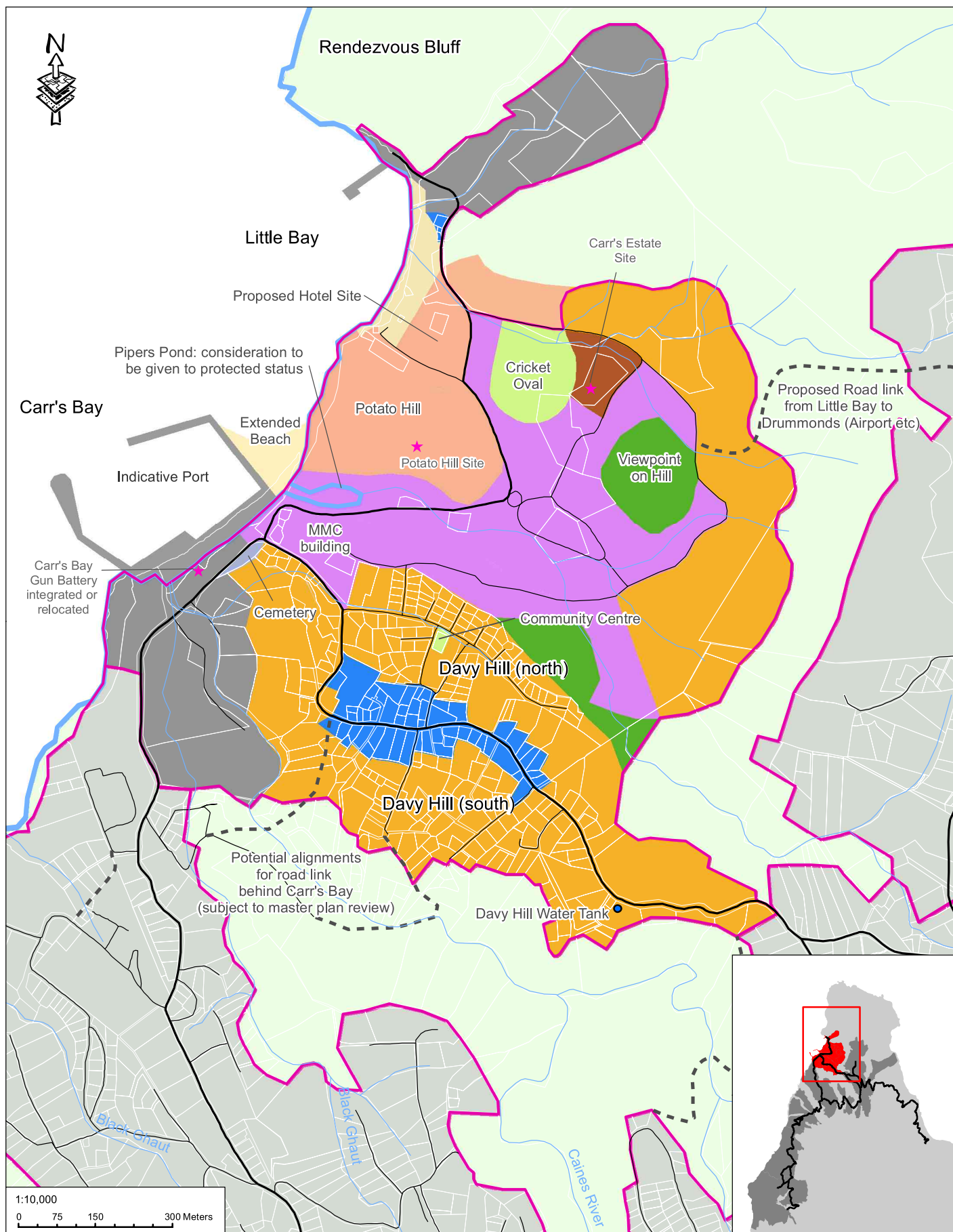
Policies

Policy LAP5.1 - Land is allocated for residential infilling and commercial development at Davy Hill as indicated in Figure 7.11.

Policy.LAP5.2 - Land is to be allocated in Davy Hill for recreational space.

Policy LAP5.3 - The development of a breakwater and upgraded port facilities must take place as a primary economic driver for Montserrat. The preferred location is at Carr's Bay, subject to relevant technical and environmental studies.

Policy LAP5.4 - Land is allocated for use as a boat yard and light scale industrial development in the existing quarry basin (known as Little Bay Ghaut) behind the port. Subject to the development of Little Bay and the need for this space, the quarry operations are to be terminated as the development of Little Bay progresses. A replacement quarry site is to be found, as necessary. This must be carried out in accordance with **Policy IS3**.



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Legend

— Main Roads	Land Use Zones	Industrial
— Minor Roads	— Cemetery	Mixed Use
--- Proposed Road Links	Commercial	Recreational
— Rivers and Ghauts	Commercial / Residential	Residential
— 2012-2022 LAP Boundaries	Heritage Park	Vegetation
★ Heritage Sites	Hotel Development	Waterfront and Beach
		Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Little Bay, Carr's Bay
and Davy Hill
Land Use Zones

January
2012

Figure 7.11

Policy LAP5.5 –The bulk fuel facility currently operated by Delta is to be better protected from flood risk from both the Collins/Caines Rivers and from storm surge. Environmental and technical studies will be necessary to ensure that any new mitigation measures are appropriately designed and managed.

Policy LAP5.6 - Land is allocated for a hotel development in Little Bay, subject to the preferred master plan option. This should be integrated into the natural topography as far as possible.

Policy LAP5.7 - Appropriate public facilities such as showering and changing facilities are to be provided for Little Bay beach and Carr's Bay beach. Local access to all beaches will be maintained. Development proposals that prevent local access to public beaches will not be permitted.

Policy LAP5.8 - A fishermen's harbour and area where boats can be taken out of the water and maintained is to be included as part of the Little Bay and the Carr's Bay development. Appropriate facilities must be included in consultation with the local fishermen.

Policy LAP5.9 - Land is to be allocated for a clinic at Little Bay. This would also benefit surrounding communities and would help to increase activity in the town.

Policy LAP5.10 - Land is to be allocated for a small fire station in Little Bay. This should have sufficient space for a fire tender, a 4x4 truck, and an ambulance (also see National Planning **Policy ES2**)

Policy LAP5.11 - Watercourses and ghauts are to be protected throughout the settlement area. Where necessary, mitigation measures are to be implemented to reduce the risk of flooding. This will include a mix of hard and soft engineering measures.

Policy LAP5.12 - Development control measures will include a comprehensive vetiver-type grass planting programme and mandatory use of permeable paving surfaces for all parking and hard-standing areas in Little Bay and Carr's Bay in order to reduce surface-water run-off.

Policy LAP 5.13- In developing the master plan for Little Bay and Carr's Bay consideration will be given to the protected status of Piper's Pond in line with National Planning **Policy EC3**.

Policy LAP 5.14 - Development must be designed and carried out such that mature trees and mangroves are maintained and loss of vegetative cover minimised. Where appropriate, additional vegetative cover is to be encouraged.

Policy LAP5.15 – Public access to Rendezvous Bay and Rendezvous Hiking Trail is to be maintained via the footpath from Little Bay.

Policy LAP5.16 - Due consideration will be given to Montserrat's international commitments to the UN Convention on Migratory Species of Wild Animals to minimise the cumulative effects of beachfront development on turtle nesting sites.

Infrastructure and Service Proposals

- Traffic calming measures such as speed bumps are to be installed along the central road in Davy Hill (north) and throughout the Little Bay estate. Similar measures may be required as part of the development of Carr's Bay, particularly in the new waterfront town area.
- A link road is to be developed between Little Bay and Drummonds, which will improve access between the new town and the airport. A proposed alignment is illustrated in Figure 7.11.
- Transport and pedestrian access is to be carefully considered around Little Bay and Carr's Bay. A shuttle service is to be encouraged, at least between Carr's Bay and the proposed hotel and existing beach at Little Bay and perhaps to include other destinations. A shaded path should encourage pedestrians to walk from the waterfront town towards the Cultural Centre and onward to the heritage site, museum and Volcano Interpretation Centre.
- Consideration might needed to realigning the main A01 road at Carr's Bay such that high volumes of through traffic do not pass through the waterfront area.

7.8 Cudjoe Head and Brades Local Area Plan

7.8.1 The Development Area and Existing Conditions

For the purposes of the Local Area Plan, the Cudjoe Head and Brades area also includes Manjack, Baker Hill, Nixons and Banks. The area is considered the central settlement of Montserrat and is an extensive area covering the ridge between Collins Ghaut to the north east and Solider Ghaut to the south west. A smaller ghaut separates Nixon and Banks from Brades and Cudjoe Head. The area straddles two ridges and there is some extensive gently sloping land on either side. The land falls away steeply where it reaches the ghauts. The area is generally well drained and where it borders the west coast it is well above sea level.

There is a variety of vegetation from scrubland to fully mature trees. The majority of plots of land are well vegetated.

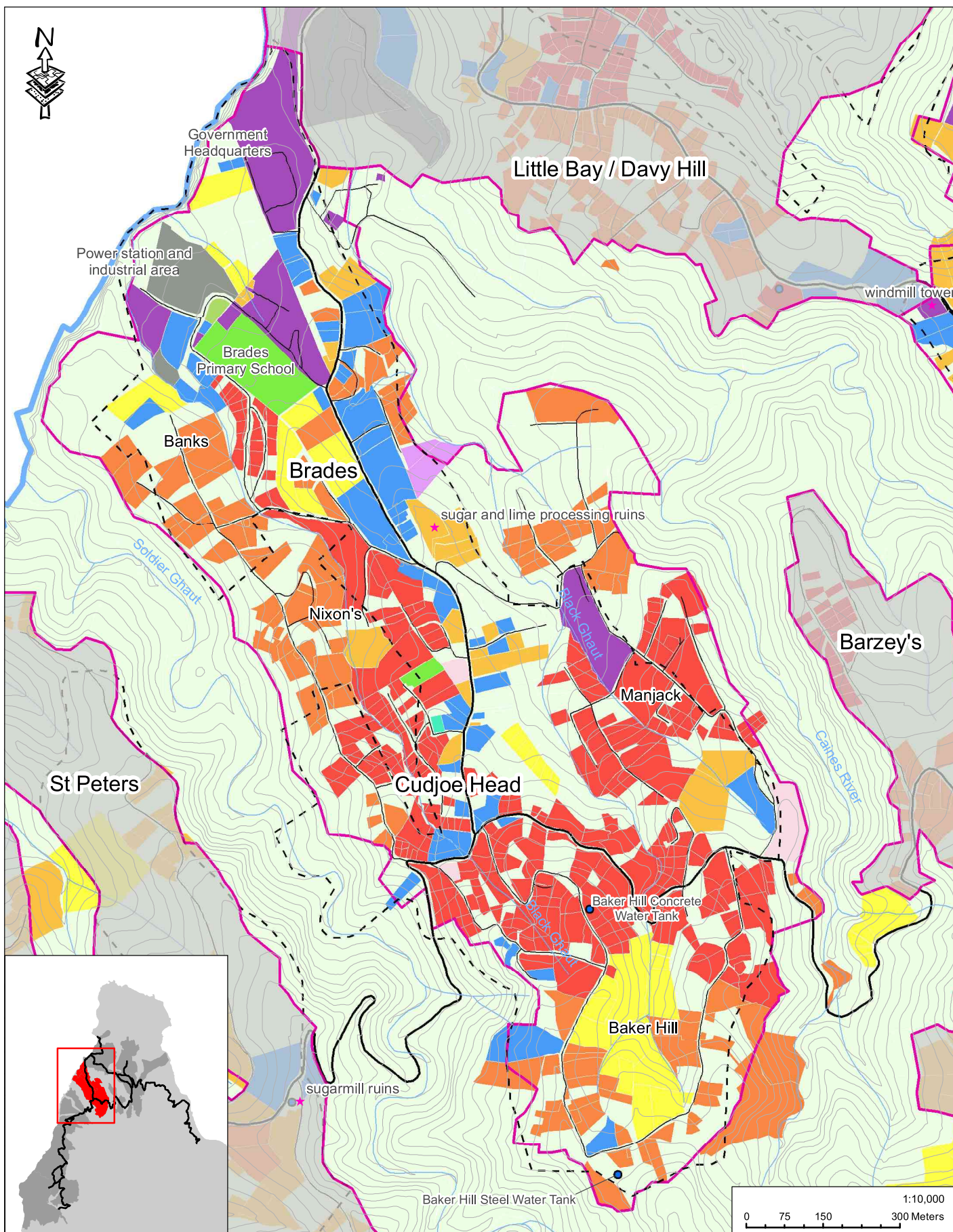
Land Use and Social Infrastructure

Since the volcanic activity, Brades has become the centre of government and commerce on the island. The LAP area covers 348 acres. Government headquarters occupies a significant area to the north west of Brades. A commercial strip has developed along the main road with a variety of shops and services available. A clinic and a sub post office are located in Cudjoe Head centre. The Brades primary school is located near to Government Headquarters and between the school and the coast an industrial zone has developed, comprising the power station, some government department workshops and some mechanical enterprises.

A quantity of government operated communal shelters are still being used for social housing. In 2011 there were 15 individuals, all with mental health issues living in this accommodation.

Nixon's and Banks occupy a ridge parallel to the main road and comprise residential dwellings and several offices. Manjack is a residential area and Baker Hill is residential with a large proportion of agricultural land. The existing land use situation is illustrated in Figure 7.12.

Local recreational space is limited. The only facilities are at Brades Primary School which are free for community use after school hours.



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Legend

— Main Roads	Existing Land Use	Education
— Minor Roads	Resi High Density	Health
— Rivers and Ghauts	Resi Medium Density	Social Care
— 2012-2022 LAP Boundaries	Resi Low Density	Community, Recreation and Sport
— 2000-2009 AAP Boundaries	Commercial	Religious
★ Heritage Sites	Government	Industrial
	Agriculture	Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

Cudjoe Head and Brades
Existing Situation (2011)

January
2012

Figure 7.12

As with most other areas of Montserrat, Loose livestock and animal grazing damage local agricultural areas and gardens and provide a serious constraint to producing fruit and vegetables.

The majority of land is privately owned and there are numerous subdivisions. There still exist some larger parcels of land with significant development opportunities. The government owns the land in the north west of the settlement area where the primary school, government headquarters, the police, the prison and the fire service are all located. An abattoir is committed to the industrial area to the west of the power station.

Infrastructure and Services

Cudjoe Head and Brades are located on the main A01 road from Salem to St John's. In 2011 a road widening programme was implemented to include a pedestrian walkway. The programme is designed to improve pedestrian safety on a road characterised by high traffic speeds and poor visibility splays from adjacent access roads. As a major commercial area, car parking spaces are relatively limited.

The demand for services in Brades extends to bus and taxi transport. People congregate in a number of unofficial stopping areas, which creates congestion and road traffic hazard. There are limited locations to shelter from rain while waiting for buses; a deterrent to their use.

A network of side roads provide access to the surrounding neighbourhoods and provide some minor diversionary routes. The road to Banks via Nixon's allows traffic to bypass Cudjoe Head during local festivities and road works in Brades. These roads are particularly vulnerable to surface water flows and are in a poor state of repair. The steep gradients are greasy and provide little traction for ascending vehicles.

All parts of the settlement area are provided with water, power. Wastewater is disposed of through septic tanks which are emptied by tanker.

Heritage and Environmental Features

The LAP area includes several historical sites and features. These include the Baker Hill sugar mill and the remains of the Brades estate plantation complex, with its associated structures; a windmill, terraces, and sugar processing facilities.

The northern aspect of the Brades LAP includes an area of particular sensitivity for endemic flora. Planning **Policy EC6** will apply to the clearance of land in these areas.

Disaster Risk

The west coast settlements are generally less susceptible to the strong prevailing easterly winds and as such the area is more protected from high winds. However, wind vulnerability is an issue across all of Montserrat during the hurricane season. The Cudjoe Head and Brades area is also vulnerable to seismic activity and where the topography is steeper there is a risk of land instability.

The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	General
Seismic	medium	General
Hurricane / high wind	medium	Tops of ridges and funnelled slopes facing east
Flooding	low	Run-off on slopes and where ghauts cross roads
Storm surge / tsunami	none	
Land slide / rockfall	low	Steep slopes on Baker Hill and the edges of Caines River

7.8.3 Development Opportunities and Constraints

Opportunities:

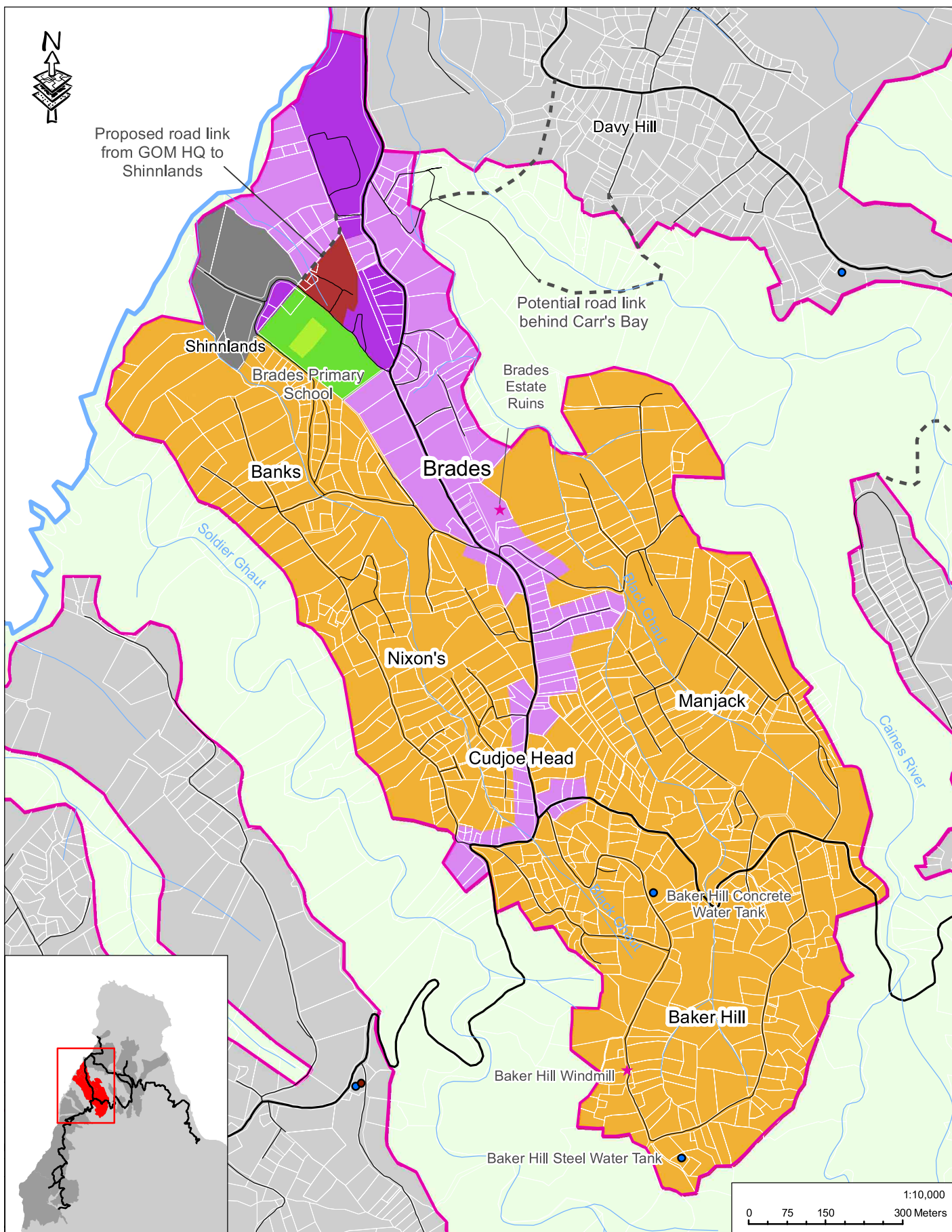
- Approximately 116 acres are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- Suitable areas for appropriate high to medium density housing, increased commercial space including offices, services and shops and additional community facilities
- Significant potential for infilling and consolidation of the existing settlement area.
- The evaluation of potential development land in *Section 5* demonstrated that there are many privately owned open areas throughout the area. It is anticipated that as demand grows these areas will be sold and developed for suitable land use.
- A number of government buildings are proposed or committed in the government headquarters area. These include new buildings for the Office

of the Premier, the Ministry of Communications and Works and the Ministry of Agriculture, Housing, Lands and the Environment. Suitable pedestrian links should be implemented to encourage employees to walk during lunch breaks and between government offices.

- Potential for local food production and fenced livestock grazing areas.
- Plots in the north of the LAP area may be able to assist with the propagation of endemic and range restricted flora.

Constraints:

- Noise impacts from the power station generators on developable land to the north and south of the power station along the coast.
- Fragmented private ownership of land. This problem is common across the north but acute in the Brades LAP. The unwillingness of many land owners to sell property to buyers who are not family and friends is placing a major strain on the developable land. Often, people wish to hold land for future use rather than develop it so that it can contribute to the housing and buildings stock.
- Steep topography along the edges of the ghauts bordering the area and within some parts of the area.
- Management and protection of heritage sites and structures.
- While many roads need upgrading and widening, there are some constraints in terms of available land along the side. This is further constrained by houses that have been built with very little setback from the road, especially near to the Cudjoe Head centre.



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Legend

- | | |
|----------------------------|------------------------------------|
| — Main Roads | Land Use Zones |
| — Minor Roads | — Predominantly Residential |
| - - - Proposed Road Links | — Light Industrial / Commercial |
| — Rivers and Ghauts | — Mixed Commercial and Residential |
| — 2012-2022 LAP Boundaries | — Education - Primary School |
| ★ Heritage Sites | — Recreational |
| | — Government and Community Use |
| | — Industrial |
| | — Vegetation |

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Cudjoe Head and Brades Land Use Zones

January
2012

Figure 7.13

7.8.4 Policies and Proposals

General Strategy

Based on population projections and land availability, the communities comprising this area are expected to expand from a 2006 population total of 942 to a population of 1,590 by 2022. Brades is likely to share the role of Montserrat's economic centre with the new development at Little Bay. As such it should continue to support a range of businesses, public services, government offices and social infrastructure, as well as residential growth. The establishment of recreation and open space should be prioritised. The linear strip, along which the village centre has formed, allows little scope for safe and convenient urban use. The speed of the through road is dangerous for pedestrians and inconvenient for the type of activity promoted in the area and efforts should be made to enhance safety and ease of access to side roads and driveways.

Policies

Policy LAP6.2 - The centre of Brades is to continue to develop as a predominantly residential and commercial mix of land use as designated in Figure 7.13. The commercial centre is to be expanded outwards to provide more depth away from the main road.

Policy LAP6.3 - A further commercial hub is to be developed between the government headquarters and the coast. This area has the potential to be an attractive urban environment where the sea views and ease of access and movement can be maximised. Restaurants and bars are also encouraged in this area.

Policy LAP6.4 - The majority of new residential development in the area is to be achieved through residential infilling and consolidation. There are several larger development areas suitable for housing. These are indicated in Figure 7.13.

Policy LAP6.5 - The village centre of Cudjoe Head is seen as an important character area, important for local events and Montserrat's tourism product. The character and architectural style of the area and buildings should be maintained as far as possible.

Policy LAP6.6 - The current industrial zone is correctly located in terms of wind direction carrying noise and air pollution. This area is to remain designated an industrial zone suitable for light industry and relevant enterprises. See Figure 7.13.

Policy LAP 6.7 - Heritage sites: With advice from the National Trust, these structures are to be protected in situ and sympathetically integrated into new developments with the addition of information signboards providing a social commentary on their role in island life.

Infrastructure and Service Proposals

- Efforts are to be made to reduce the speed of through-traffic along the main A01 road through Brades. Traffic 'pinch points' that also act as pedestrian crossings are to be considered for this purpose.
- Where feasible, road and pedestrian links are to be made between areas away from the main road to allow easier access and permeability.
- A pedestrian walkway is to be implemented along the length of the commercial strip from the top of Cudjoe Head to the Government Headquarters access road at Brades and continued down to the new town at Carr's Bay waterfront.
- The through roads through Banks and Nixon's are to be upgraded and widened. These roads must have the capacity to provide a secondary route through the centre of Brades if the main road is blocked.
- Street lighting is to be installed along the main road through Brades.

7.9 St Peter's Local Area Plan

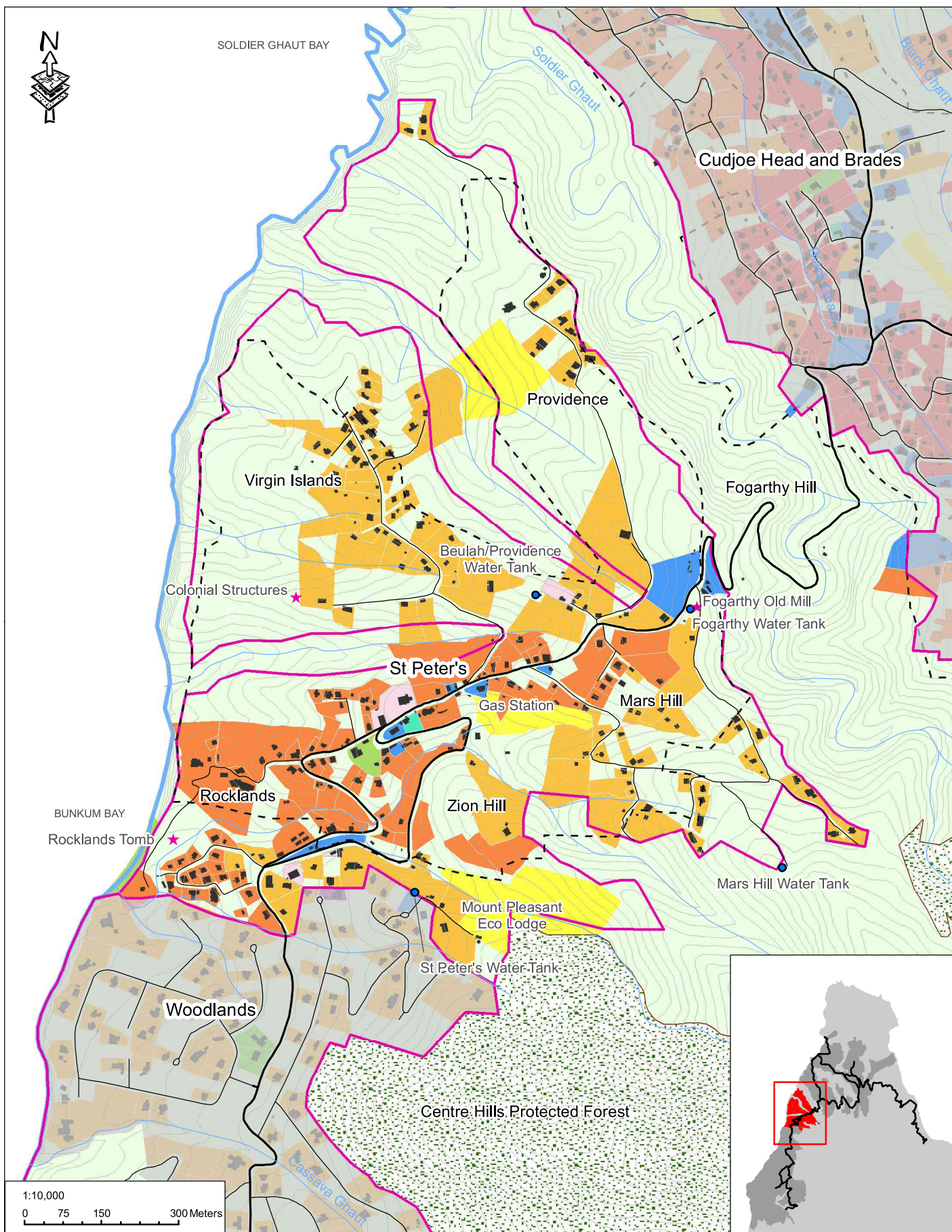
7.9.1 The Development Area and Existing Conditions

St Peter's is one of the old established villages in the north. Its 2006 population was 430 and it is an attractive area with a vibrant community. It is physically separated from Cudjoe Head by Soldier Ghaut which is traversed by the main A01 road via a series of steep hairpins at Fogarthy Hill. To the south of the St Peter's area are the low density subdivisions of Woodlands and Olveston. The St Peter's area has developed along several ridge lines extending down from the Centre Hills towards the shoreline. Topography is generally steep and drainage is provided by a network of ghauts including Soldier Ghaut in the north and Bunkum River in the south.

Land Use and Social Infrastructure

The LAP area covers 287 acres and Figure 7.14 sets out the baseline land use. The centre of St Peters takes a linear pattern along the main road. Several shops and services including a clinic and a sub-district post office, churches, a gas-station and a few local bars are situated in this area. These are integrated with high-density housing. Lower density residential development extends to Providence and Virgin Islands in the west along the two feeder roads. Low density residential development also extends to Mars Hill in the east and Rocklands and Bunkum Bay in the south. Mount Pleasant Campsite and Eco-Lodge is situated in the south eastern corner of the area. Although the Beachettes areas (particularly Woodlands) are set out in a separate LAP, they provide a significant catchment for the services and shops in the St Peter's area.

Bunkum Bay performs an important recreational function, which helps mitigate a severe lack of community open space and facilities – there is nowhere to play football or cricket or for parents to take young children. There is only a very small hard court area with one basketball hoop. Furthermore, there is no multi-purpose community centre. Currently the Old School building acts as a community centre but this is one large room with basic and worn down facilities. This is the only designated hurricane shelter in the village and this is not sufficient. The majority of land is privately owned and highly fragmented.



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Legend

— Main Roads	Existing Land Use	Education
— Minor Roads	Res High Density	Health
— Rivers and Ghauts	Res Medium Density	Social Care
— 2012-2022 LAP Boundaries	Res Low Density	Community, Recreation and Sport
— 2000-2009 LAP Boundaries	Commercial	Religious
★ Heritage Sites	Government	Industrial
■ Protected Forest	Agriculture	Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTSERRAT
2012-2022

St Peter's
Existing Situation (2011)

January
2012

Figure 7.14

Infrastructure and Services

There is one central road through the St Peter's area, the main A01 road. Access to Providence, Virgin Islands and Mar's Hill is along partially paved roads that are in need of repair. The roads to Rocklands and Bunkum Bay are paved and very steep in places. There is currently no road access to Zion Hill and Tower Hill with potential residential and agricultural areas. The access road to Mars Hill is limited. Pedestrian safety is a concern on the heavily trafficked main road. All residential dwellings and other commercial buildings have access to the power and water networks. Wastewater is collected in individual unit septic tanks.

Heritage and Environmental Features

The area has a cover of dense vegetation to the east which becomes more scrub-like closer to the shoreline in the west. There are several areas of environmental significance including the ghauts and vegetation cover close to the Centre Hills. The beach at Bunkum Bay is an important turtle nesting area.

The St Peters LAP includes a number of important heritage sites spanning pre-historic and colonial periods. This includes the standing remains of a sugar-processing windmill at Fogarthy, a series of colonial structures between Virgin Island and the coast and most significantly a site at Rocklands with both historic and pre-Columbian components. It seems to have functioned as a colonial period cemetery as evidenced by the Davies Tomb and other, unmarked graves to its north and there is evidence of extensive prehistoric activity – possibly between 200 and 500BC.

Disaster Risk

St Peter's is vulnerable to storm water flooding if drainage is obstructed. The area is susceptible to hurricane force winds during hurricane season and shares Montserrat's vulnerability to seismic activity. Parts of the area cover very steep terrain which could be vulnerable to instability if developed inappropriately.

The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	General
Seismic	medium	General
Hurricane / high wind	medium	Tops of ridges and funnelled sloped facing east
Flooding	low	Run-off and where ghauts cross roads
Storm surge / tsunami	none	
Land slide / rockfall	medium	Steep slopes

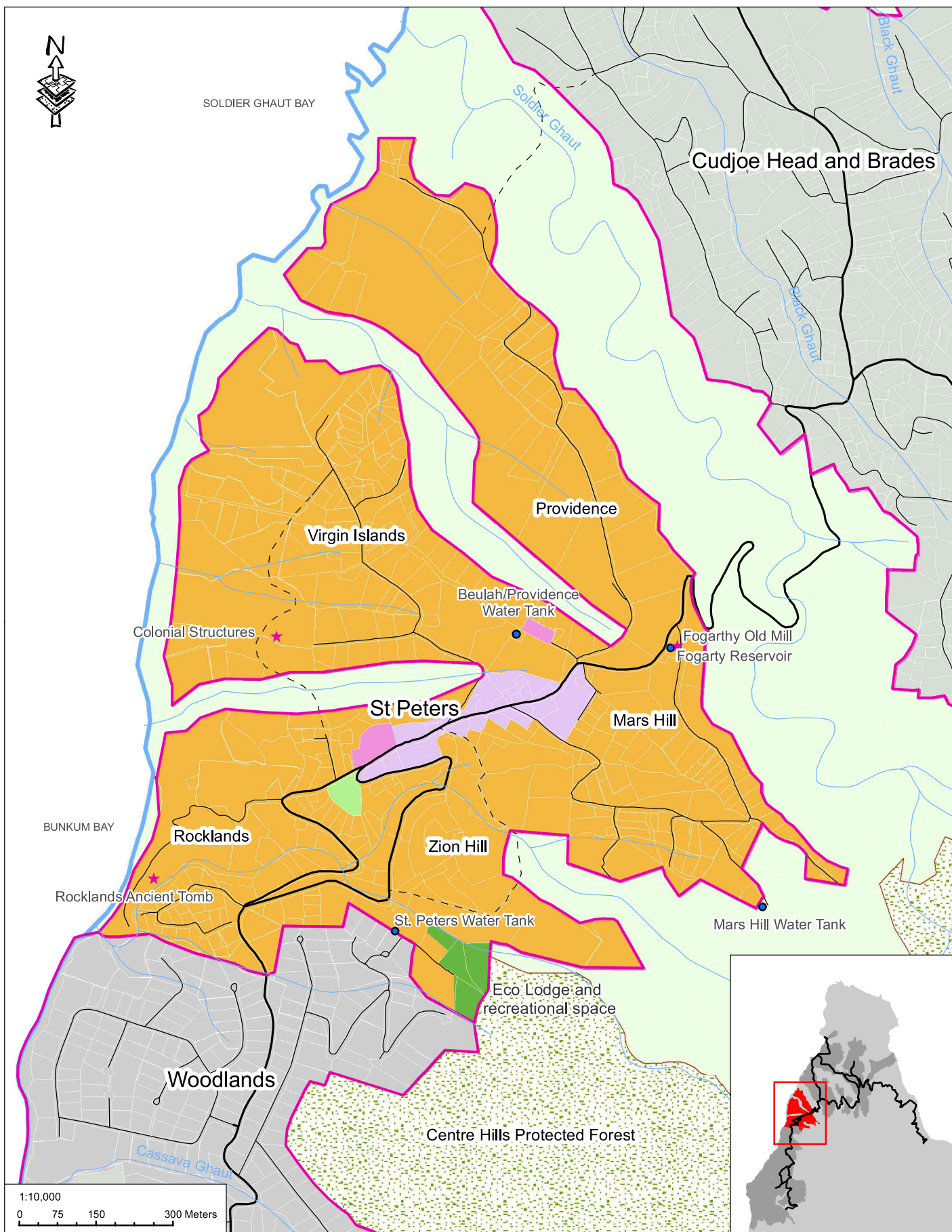
7.9.3 Development Opportunities and Constraints

Opportunities:

- Approximately 150 acres are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- Significant potential throughout the settlement area for residential infilling.
- Several large areas of land to the west along the Providence and Virgin Islands ridges. These are defined in *Section 5.7* as significant development areas.
- Opening up land on Zion Hill and Tower Hill would enable residential and agricultural development to occur. Water would have to be tapped in these areas or piped from elsewhere to provide water to agricultural areas on Zion Hill.
- Spectacular views along west coast, particularly from the Providence and Virgin Islands areas. These are suitable for tourism development and high end residential development.

Constraints:

- Steep topography in some areas limits extensive development.
- Significant need to preserve vegetative cover to prevent loss of relatively fertile soils.
- Buffer zones adjacent to the principle ghauts limit the development of some subdivided lots, although this should not affect residential development if the lower part of the plot remains vegetated.
- Limited road access and existing provision of utilities.



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Legend

- Main Roads
- - Minor Roads
- - Proposed Road Links
- Rivers and Ghauts
- 2012-2022 LAP Boundaries
- ★ Heritage Sites
- Protected Forest

Land Use Zones

- Predominantly Residential
- Predominantly Commercial
- Community / Church
- Recreation
- Eco-Lodge and Recreational
- Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

St Peter's Land Use Zones

January
2012

Figure 7.15

7.9.4 Policies and Proposals

General Strategy

St Peter's and the surrounding settlements are seen as an area of continuing residential growth. Based on population projections and land availability, the St Peter's area can expand from a 2006 population of 430 to a population of around 1,000 by 2022. The area contains two of the island's significant development areas: Providence and Virgin Islands. These are suitable for residential development as well as small scale agriculture and agro-processing enterprises, if appropriately located. The commercial centre of St Peter's plays an important focal role for local services and should also maintain its heritage character, particularly for Montserrat's tourism product. Existing and additional tourism facilities and accommodation are encouraged in the area.

Policies

Policy LAP 7.1 - Residential infilling and development is to be encouraged as indicated in Figure 7.15. Residential development is particularly encouraged in Providence and Virgin Islands, considered significant growth areas.

Policy LAP 7.2 - Commercial land use will be permitted as appropriate in predominantly residential areas, to be evaluated on a case by case basis.

Policy LAP 7.3 – Land is allocated for the growth of the commercial centre in St Peters. This is designated as mixed use residential and commercial..

Policy LAP 7.4 - An area suitable for recreational use is to be allocated as a priority. This is to be developed for the community as soon as possible to include facilities for football, cricket and a multipurpose hard court.

Policy LAP 7.5 - Protection of ghauts and green buffers is to be enforced in line with National Planning **Policies EC4 and EC5**.

Policy LAP 7.6 – Land is allocated to encourage the continuation of an eco-lodge in the south west corner of the LAP area.

Infrastructure and Service Proposals

- Subject to increased local population and the need for more development land, an access road is to be cut to Zion Hill and Tower Hill to unlock development land. An indicative alignment is shown in Figure 7.17.
- Subject to increased local population and the need for increased access and road capacity, a road link is to be established between Providence and Banks, across lower Soldier Ghaut. An indicative alignment is shown in Figure 7.17.
- Subject to increased local population and the need for increased access and road capacity a road link is to be established between Virgin Islands and main village centre. An indicative alignment is shown in Figure 7.17.
- Road safety is to be prioritised through the village centre, with consideration given to widening the road where possible.
- Bus shelters are to be provided further out from the village centre including near to the Bunkum Bay junction and near the top of Fogarthy Hill

7.10 Woodlands and Olveston Local Area Plan

7.10.1 The Development Area and Existing Conditions

Woodlands and Olveston are residential areas that provide a significant catchment for the village centres of St Peters and Salem. They form part of the Beachettes area, a specific development of residential sub-divisions created during the 1960s, located south of St Peters between the protected Centre Hills forest and the west coast. The Local Area covers 446 acres.

Land Use and Social Infrastructure

Existing land use is illustrated in Figure 7.16. The majority of land is occupied by residential units and undeveloped lots. Today these villas are owned by a mixture of Montserratians and expatriates. These residences make an important contribution to Montserrat's economy. Villa construction, upgrades and maintenance employ a wide range of people. Many villas are also rented to tourists, providing an attractive high-end destination for holiday makers. Resident and vacation villa occupants support local supermarkets and other outlets. There are also several other land uses in the area including offices, St Augustine's school, a pre-school nursery, several guesthouses, and three restaurants.

Land use is restricted by covenants that property owners sign as part of the terms of their property deeds. These restrict the size and type of building permitted on residential subdivisions, set out guidelines on how a property should be kept looking visually attractive and also restrict commercial activity on these properties. Existing commercial enterprises have generally been accepted as they add value to a community.

Woodlands beach is an important feature of the area and provides one of Montserrat's most attractive and well serviced beaches, important for recreation and social activities.

Infrastructure and Services

The area was developed with a network of access roads in proportion to the scale of development. This has provided a pleasant and tranquil system of roads throughout the area; Government is responsible through its Public Works Department for road and verge maintenance. The area is fully serviced by water, power and telecommunications networks. Each plot has individual septic tanks for wastewater.

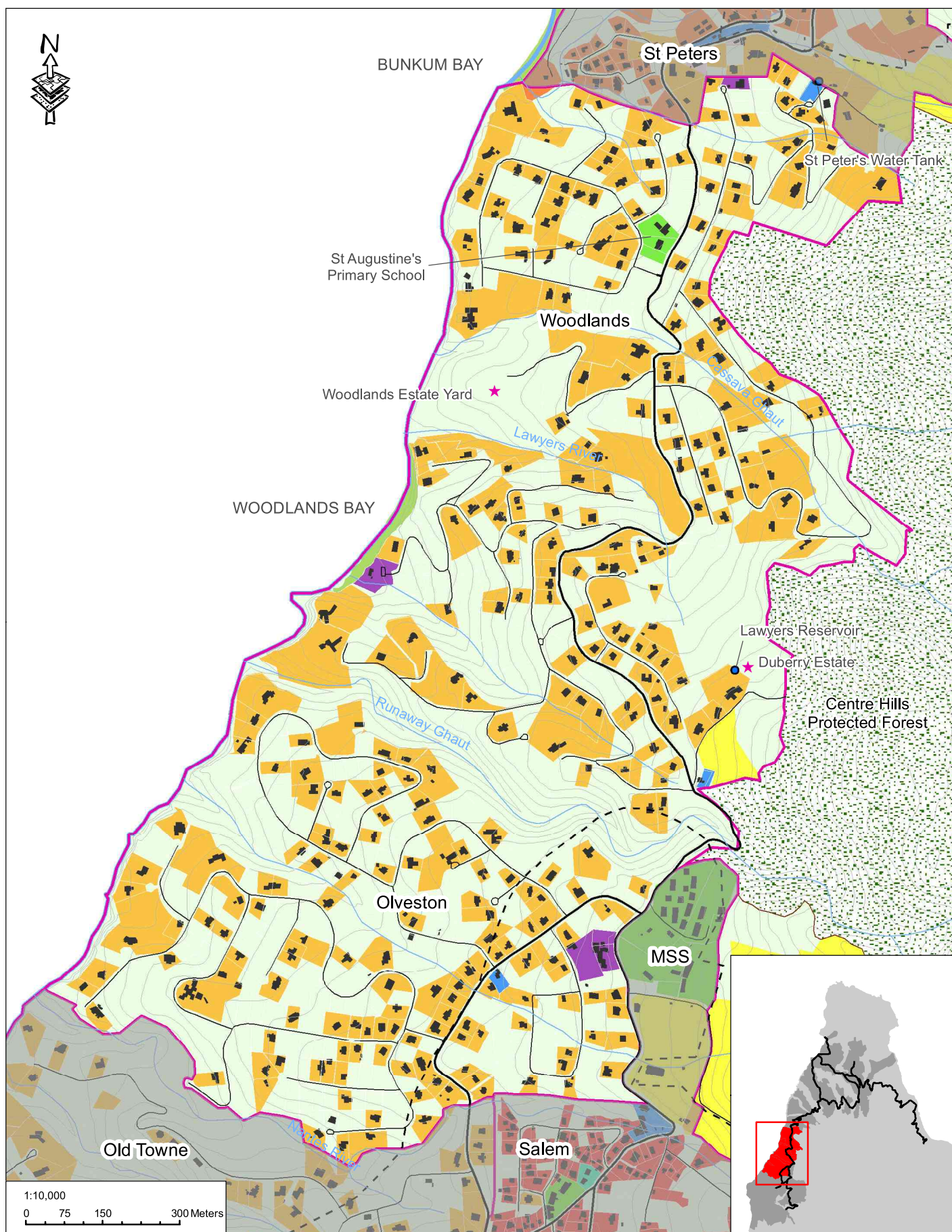


Figure 7.16

Woodlands borders the Centre Hills, the principal water catchment area in the north of Montserrat and the Lawyers reservoir is located on this border. Similarly, the Olveston reservoir is located where the Olveston area borders the Centre Hills.

Heritage and Environmental Features

From its eastern boundary on the Caribbean Sea to its western boundary with the Centre Hills, this area supports a rich and healthy bio-diversity. The low density pattern of development is one that has allowed nature to flourish. Pockets of dry forest are interspersed between residential plots, while expansive riparian strips and green buffers line the major ghauts which flow west from the peaks of the Centre Hills, including the critical drainage pathways of Runaway Ghaut and Lawyers Rivers. Runaway Ghaut also has a place in local folklore and is a tourist attraction in its own right

Large vegetated garden spaces have altered the natural distribution of plant species, providing a diverse habitat which has encouraged a range of bird types into the area. The proximity of the coastal zone, means that sea and wading birds are also common – Brown Pelicans are a regular feature in the calm waters of Woodlands Beach Bay. Woodlands Beach is also one of the most important sites on the island for nesting Green and Hawksbill Turtles, while an artificial reef in the Bay offers a promise for divers and swimmers.

The buffer areas of the LAP, adjacent to the Centre Hills, offer quite a different environment as vegetation type shifts towards a more defined forest structure containing transitional areas of shrubs and close canopy trees. The area around Cassava Ghaut is particularly noteworthy as the only known location of the restricted range and critically endangered Montserrat Galliwasp.

Archaeological and heritage features within the LAP boundary are largely associated with the plantation legacy of the Woodlands and Olveston Estates. Significant heritage sites in the LAP area include the standing remains of the Duberry Estate Plantation and the Woodlands Estate Yard. See Appendix F(1 for a description of these sites. The Montserrat National Trust is also located in the Local Area and contributes to the conservation and preservation of Montserrat's heritage. A key tourist attraction, the Trust's botanical and Amerindian Gardens are particularly noteworthy.

In addition to matters relating to disaster risk, key issues affecting this LAP include the proliferation of loose and feral livestock which graze indiscriminately, poor waste management practices which encourage rats and other vermin and the dumping of major items, including scrap metal.

Disaster Risk

Part of the LAP area comprises Hazard Zone A (as defined by the MVO in November 2011, but reference should be made to the MVO website for the current zone boundaries). Unrestricted access is permitted in Zone A except when the Hazard Level is at Level 5. Similar to the rest of the island, the area is also at risk from hurricane and seismic events. There is a risk of localised flooding, especially around the ghauts that carry water from the Centre Hills through the area to the west coast. The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	low	Zone A, as defined by the MVO
Seismic	medium	General
Hurricane / high wind	medium	Particularly tops of ridges and funnelled slopes facing east
Flooding	low	Run-off on slopes and where ghauts cross roads
Storm surge / tsunami	none	
Land slide / rockfall	low	Steep topography in some areas

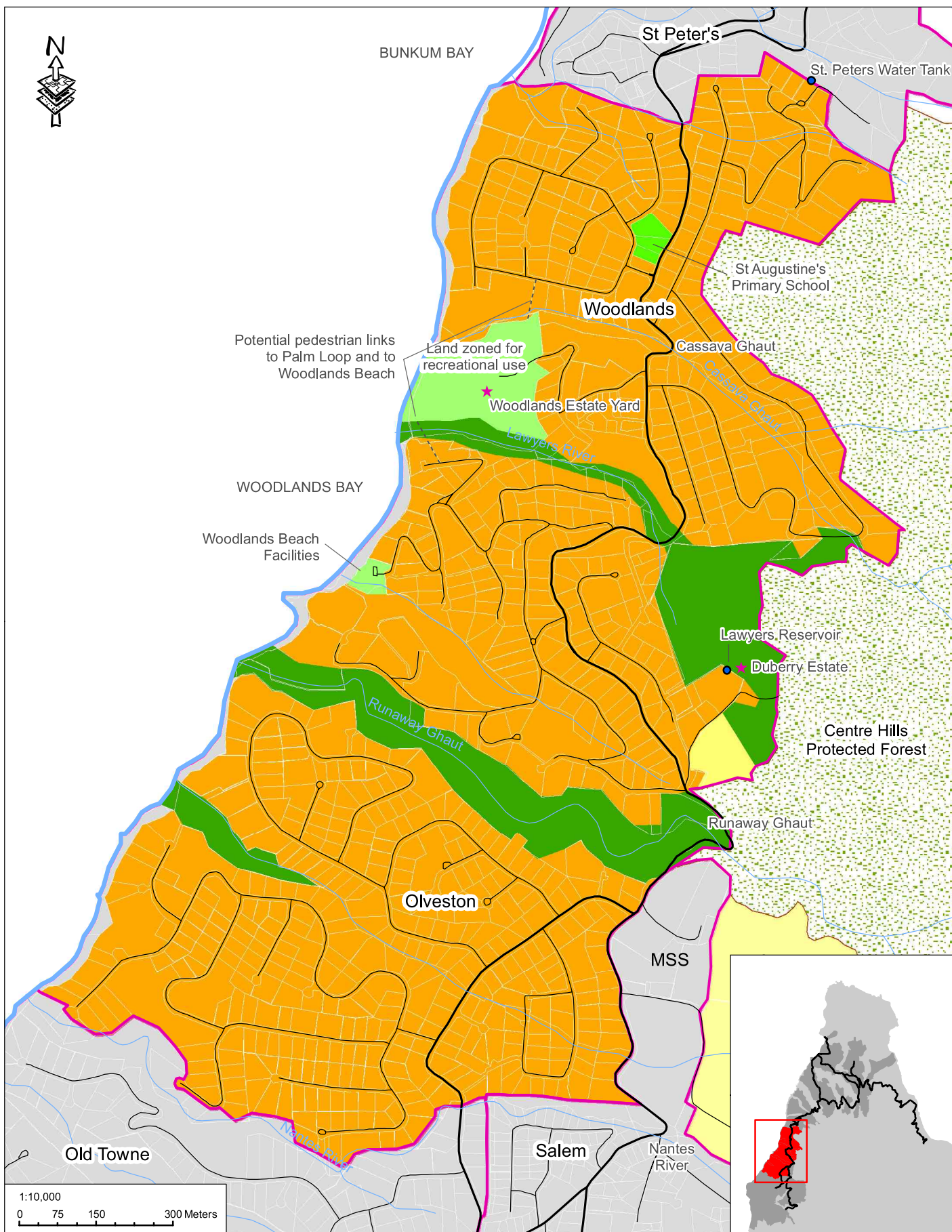
7.10.3 Development Opportunities and Constraints

Opportunities:

- Approximately 130 acres are available for development, not taking into account land ownership issues, based on the Developable Land Evaluation in Section 5.
- A number of vacant lots are available to be developed for residential use with gently sloping topography and views over the west coast or inland towards the Centre Hills.
- The area is also suitable for holiday rental villas and guesthouses.

Constraints:

- The areas within Zone A are subject to controlled access when the MVO sets the volcanic risk at Hazard Level 5.
- Development is subject to restrictive covenants.



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Legend

- Main Roads
- Minor Roads
- Rivers and Ghauts
- 2012-2022 LAP Boundaries
- ★ Heritage Sites

- Land Use Zones**
- Residential
 - Education
 - Recreational
 - Agricultural
 - Conservation Area
 - Protected Forest

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

**Woodlands and Olveston
Land Use Zones**

January
2012

Figure 7.17

7.10.4 Policies and Proposals

General Strategy

It is expected that the existing residential land use will continue to grow during the plan period to 2022. The Beachettes area is seen as a unique asset to Montserrat. Applications for appropriate commercial activities such as guesthouses will be reviewed on a case by case basis and considered favourably when they add social and community value to the residential community. (See **Policy H3**)

Policies

Policy LAP8.1 – Continued residential growth will be encouraged throughout the LAP area

Policy LAP8.1 - Eight acres of land is allocated for recreational use north of Woodlands beach as illustrated in Figure 7.17. (See **Policy RL10**). Consideration is to be given to developing pedestrian links as indicated in Figure 7.17.

Policy LAP8.1 - The St Augustine's School site is formally zoned as educational land and consideration is to be given to accommodating its needs to expand on adjacent land. (See **Policy E2**)

Policy LAP8.1 - Development is not permitted in the green buffer zones identified in Figure 7.17. These are generally ghauts and, as such, play an important ecological and flood mitigation role and act as an attractive visual backdrop to many dwellings.

Infrastructure and Service Proposals

- Consideration is to be given to improving road side drainage where necessary throughout the area.
- Public roads will continue to be maintained by the PWD and road side vegetation trimmed appropriately.
- Any street lighting projects must include public consultation.
- Potable water capacity in the area will be increased in line with demand as vacant lots are occupied and demand grows.
- As traffic levels grow, consideration may be given to developing footpaths along the heavier trafficked roads.

7.11 Salem Local Area Plan

7.11.1 The Development Area and Existing Conditions

Salem, including the local settlements of Happy Hill, Hope, Fleming and Frith, is a sizeable settlement lying in the extreme south of the northern zone. Parts of it are in Zones A and B of the Hazard Zone system as set by the Scientific Advisory Committee (SAC). The area was evacuated during the volcanic activity of the late 90's but has been re-inhabited since 1998. Salem has changed significantly since the volcanic activity of the mid '90s. It used to be one of the key commercial centres on the island but has since lost much of this activity. Salem is bordered to the west by the residential subdivisions of Old Towne and Olveston. The Centre Hills contain its eastern boundary and to the south lies the Belham Valley which has become an unstable deposit of volcanic material where there was previously a golf course. The land is generally gently sloping but becomes steeper towards the Centre Hills in the east. A number of significant ghauts run through the Salem area including Nantes River and Doctor Ghaut.

Many parts of the settlement area are vegetated and there is a high concentration of mature trees throughout the area.

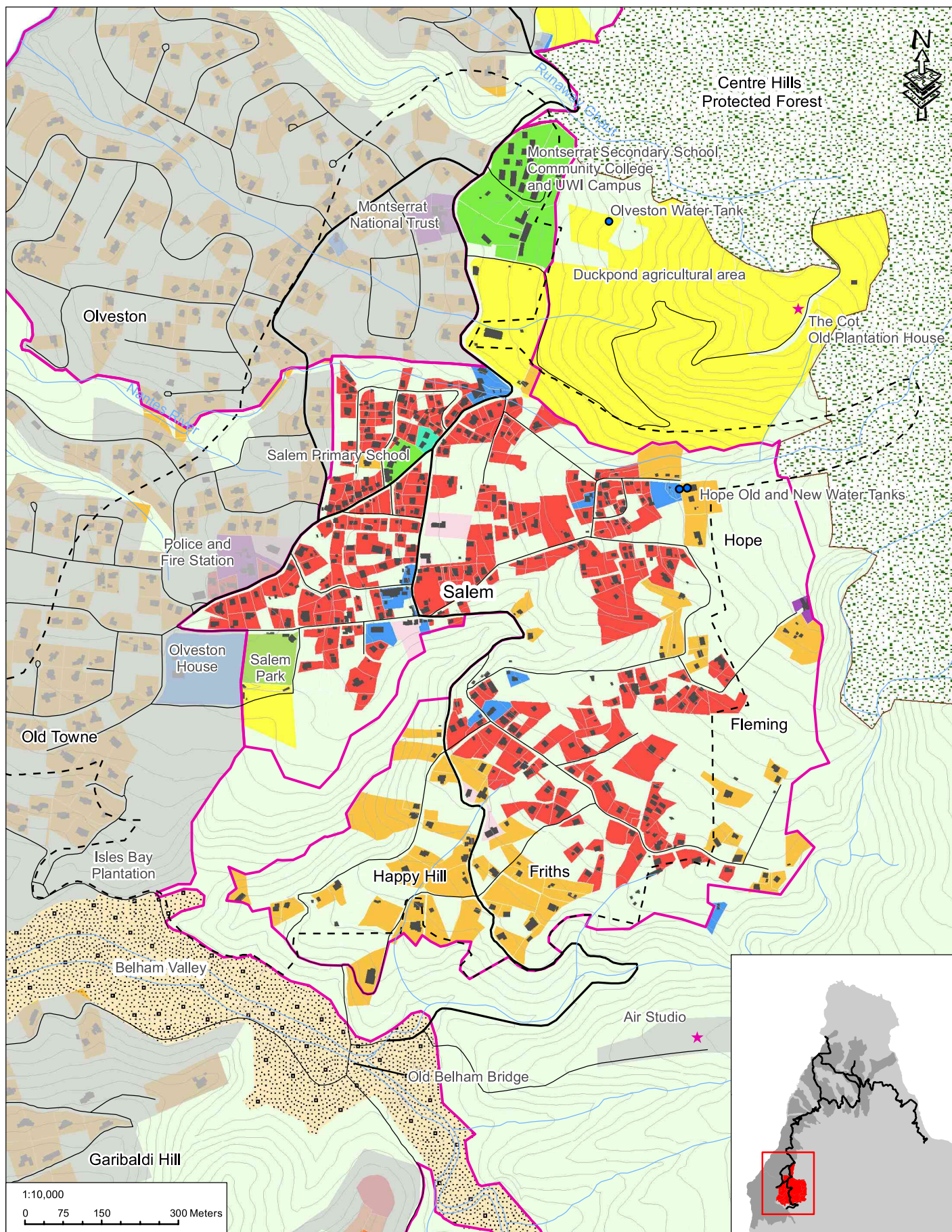
Land Use and Social Infrastructure

Salem has changed since the volcanic activity from one of the main village centres to an area starved of investment and poorly maintained. The LAP area covers 271 acres. There is a small concentration of shops in the centre of the village. Salem Park is the island's second cricket pitch, along that at with Little Bay, and provides facilities for a range of sports and events for the local and the national community.

There are several churches in the area, many of which act as hurricane shelters. Salem Primary School occupies a site which is no longer used as a school. Although the School is used as an ad-hoc community centre there is no formal facility available to residents. There is a combined police and fire station to the west of the area.

The outlying areas have a majority of residential land use with a few shops and services in places. Although the Beachettes areas (particularly Olveston, Old Town and Isles Bay) are not considered part of this LAP, they provide a significant catchment for the services and shops in Salem.

The majority of land is privately owned and much is subdivided into smaller lots.



GOVERNMENT OF MONTERRAT

Ministry of Agriculture, Land,
Housing and the Environment

PHYSICAL PLANNING UNIT
in association with
IMC WORLDWIDE LTD.

Legend

— Main Roads	Existing Land Use	Education
— Minor Roads	Res High Density	Health
— Rivers and Ghauts	Res Medium Density	Social Care
— 2012-2022 LAP Boundaries	Res Low Density	Community, Recreation, Sport
— 2000-2009 LAP Boundaries	Commercial	Religious
★ Heritage Sites	Government	Industrial
	Agriculture	Protected Forest
		Vegetation

PHYSICAL DEVELOPMENT PLAN
FOR NORTH MONTERRAT
2012-2022

Salem
Existing Situation (2011)

January
2012

Figure 7.18

Infrastructure and Services

Salem is at the southern extent of the A01 road that runs north to St John's. This is the only route of access and egress to the north of the island. The road network in the area is currently in a poor state of repair and many of the side roads are very narrow. There are several unpaved roads leading to residential areas.

Several dwellings in Hope are not connected to the mains water supply and do not have an access road. There is a local perception that Salem is the area worst affected on island by power cuts and phone line problems.

There remain significant quantities of government owned social housing in the Salem area – 21 wooden family units in Friths and Hope in 2011.

Heritage and Environmental Features

There are few notable archaeological and heritage remains within the Salem LAP boundary. However, the Walker Building is a wooden structure of local heritage importance. The old mill adjacent to Gourmet Gardens restaurant is of some significance as is the old Olveston airfield petrol pump in the same location. Much of the area is well covered in vegetation comprising many mature trees, bushes and scrubland. Residential areas generally maintain a high level of vegetation cover. Feral livestock is a particularly severe problem in the Salem area and a constraint to growth of new vegetation and local produce.

Disaster Risk

Part of the LAP area comprises Hazard Zones A and B (as defined by the MVO in November 2011, but reference should be made to the MVO website for the current zone boundaries). Unrestricted access is permitted in Zone A except when the Hazard Level is at Level 5. Zone B is subject to 'controlled access' for Hazard Levels 4 and 5. Despite the presence of several ghauts the area does not suffer from flooding. However the road connecting Salem to the rest of the northern part of the island is vulnerable at the points where they cross ghauts and could be washed out during a major rainfall event. The area is more protected from high wind than many other parts of the island although it remains vulnerable during the hurricane season. The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	medium	General
Seismic	medium	General
Hurricane / high wind	medium	General
Flooding	low	Where the Ghauts cross the roads
Storm surge / tsunami	none	
Land slide / rockfall	low	Near the MVO. Along the edges of major ghauts

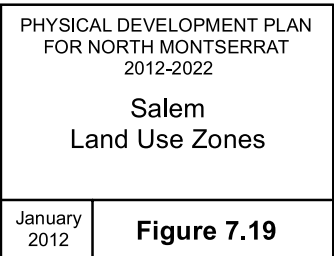
7.11.3 Development Opportunities and Constraints

Opportunities:

- Approximately 161 acres are available for development, not taking into account land ownership issues, as based on the evaluation of developable land in *Section 5*.
- The Salem area has a significant amount of undeveloped land. This implies that there is significant potential for infilling residential areas and many opportunities for other types of development.
- There are several un-fragmented areas development land suitable for agriculture. Some areas are relatively attractive for small scale industry and agro-processing activities. A German company currently holds planning permission for a water bottling plant on the site adjacent to the MSS.

Constraints:

- While Zone B has no restrictions to development (in 2011) it remains an area subject to rapid change in risk level, depending on the volcanic activity.
- A significant constraint is the reduced access to finance and insurance as bank and insurance companies provide very limited services at the expense of significant collateral in another location north of Nantes River. Furthermore, the reluctance of GOM and DFID to fund infrastructure in this area is constraining development and discouraging people from investing in the area.
- Road condition and capacity also hinder access to many local areas, particularly in Hope and Flemings.



7.11.4 Policies and Proposals

General Strategy

Salem must not be allowed to deteriorate due to a lack of public and private investment. The area constitutes a valuable inhabitable area of north Montserrat. Action to stop the decline of Salem will avoid difficult social and financial problems into the future. There is no greater risk to the majority of Salem (areas not in zone B) than there is to the rest of the island in terms of violent volcanic activity such as pyroclastic flows. The area is susceptible to ashing but, depending on wind direction, this is a vulnerability of the entire island.

Based on population projections and land availability, the area is likely to expand from a 2006 population of 688 to a population of 1,020 by 2022. Salem will continue to grow as a vibrant commercial centre with an important sports venue at Salem Park and a national public events space in the village centre. A local market established in the village centre is likely to attract a wider range of people to the village centre which will provide a base for attracting new businesses. Residential development will grow in all areas although a higher concentration of agricultural activity is encouraged in the south east of the Local Area around Fleming. Light scale industries are encouraged in appropriate locations. The area and its facilities and amenities should be made particularly attractive to middle income families, as well as catering for all other age and income brackets, as they will help drive forward a successful local village and economy.

Policies

Policy LAP9.1 – Land is allocated for residential and commercial development in the Salem area as indicated in Figure 7.19. High and medium density residential growth is encouraged.

Policy LAP9.2 – Agricultural development or agricultural homestead development is instead encouraged in the east of the Local Area, as illustrated in Figure 7.19.

Policy LAP9.3 - The consolidation of Salem village centre is encouraged with predominately commercial land use designated. Shops and services are encouraged to develop in this area.

Policy LAP9.4 - Land is to be allocated for a simple covered market to revive commerce in the village centre and to provide local farmers with an official outlet. Appropriate parking and access must be included in the development. This should be developed in consultation with local stall holders and farmers.

Salem LAP

Policy LAP9.5 - Open space is to be preserved in the centre of Salem village for public events such as St Patrick's Day celebrations.

Policy LAP9.6 - Land is to be allocated for a playground suitable for children.

Policy LAP9.7 - The architectural heritage and character of the Salem village centre is of value to local society and for Montserrat's tourism. As stated in national *Policy TE10*, the centre Salem is to be designated a character area such that its protection and enhancement will stimulate a vibrant cultural area.

Policy LAP9.8 - Land is allocated for the development of a water bottling plant or agro-processing industry to the area of land just north of Nantes River, as indicated in Figure 7.19. Development permission for such enterprises should not be permitted if the impact on surrounding residential areas is likely to be significant in terms of noise, odour and other disturbance.

Policy LAP9.9 - Land is allocated for light scale industry for sand-based value adding products and agro-processing in Happy Hill and Friths as indicated in Figure 7.19. Permission for such enterprises will be guided by policies in *Section 6.3.11*.

Policy LAP9.10 - Salem Primary School is to continue to provide a suitable location for community activities and meetings. Consideration should be given to providing community IT facilities in one of the empty classrooms. Once the school is reopened for pupils, an alternative community centre is to be developed, if required.

Policy LAP9.11 - Protection of ghauts is to be enforced in line with **Policy E3**. The main watercourses are Runaway Ghaut, Nantes River and Doctor Ghaut.

Infrastructure and Service Proposals

- There is a need to preserve or enhance the open space and public venue in the village centre, needed for religious events or national celebrations
- The centre of Salem needs some regeneration work to make the area attractive for business and residents.
- Access to existing and potential farming areas is limited. There are many areas that could be farmed, especially south east of the LAP area and access roads and water infrastructure are to be implemented.
- Underground cables are preferable to mitigate the corrosive effects of ash fall and should be implemented as new infrastructure is installed.

Salem LAP

- The MVO bypass road is to be developed as a secondary route of access and egress from the MVO facility and helipad.
- Upgrades of access roads to Hope as marked on Figure 6.5 and discussed in the '*Infrastructure Plan 2012-2022*'.

7.12 Old Towne, Isles Bay and the Belham Valley Local Area Plan

7.12.1 The Development Area and Existing Conditions

The Old Towne, Isles Bay and Belham Valley areas are the most southern residential areas of north Montserrat and form a significant catchment to the village centre of Salem. Along with Woodlands and Olveston, they form the Beachettes area which is a unique asset to Montserrat. The Local Area comprises a large area of 617 acres, of which in 2011 the Belham Valley floor comprises close to 130 acres from the shore line to the Zone B/C boundary. While generally in Hazard Zone B (2011) the area remains at risk from any future volcanic activity with the possibility of further changes to landscape and the evacuation of residents when volcanic activity is at Hazard Level 4 or 5.

Land Use and Social Infrastructure

Existing land use is illustrated in Figure 7.20. The area is well established as low-density residential use with villas often set in well maintained gardens or yards. The origins of this land use go back to the 1960s when the Montserrat Company bought the entire area and sold plots of land to be developed as villa housing in close proximity to a golf course in the Belham Valley. The objective was to contribute to Montserrat's economy via significant villa-based tourism. Several ghauts of visual and ecological importance run through the Local Area. Today these villas are owned by a mixture of Montserratians and expatriates. The area comprises an important land use for Montserrat's economy. Villa construction, upgrades and maintenance employ a wide range of people. Many villas are also rented to tourists, providing an attractive high-end destination for holiday makers. The LAP area also includes some guesthouses.

Land use is restricted by covenants that property owners sign as part of the terms of their property deeds. These restrict the size and type of development permitted on residential sub-divisions, set out guidelines on how a property should be maintained visually and also prevent most types of commercial activity taking place on a property. Small commercial enterprises, such as local shops and small restaurants, are generally accepted as they add value to the community.

During the period of volcanic activity since 1995, the Belham Valley has changed dramatically. Pyroclastic flows in the upper parts of the valley and mud flows and lahars down the entire course of the valley have resulted in a huge amount of

volcanic material including sand, rock and pumice being deposited. The golf course no longer exists. The volcano currently (January 2012) remains in a state of "pause" since February 2010, but the MVO warns that the Hazard Level could be increased at any time - and possibly at very short notice.

A major pyroclastic flow in February 2010 closed the sand-mining operations in the Trants area and these deposits remain too hot for mineral extraction. Shortly thereafter, the Hazard Level was reduced from 4 to 3 and this has permitted sand-mining in the Belham Valley area. The Belham Valley currently offers the only opportunity for sand-mining and Government is currently taking steps to improve the regulation and environmental mitigation measures of these operations.

Lime Kiln Beach, Old Road Bay Beach and Isles Bay Beach are located in this area and constitute an important recreational and social function.

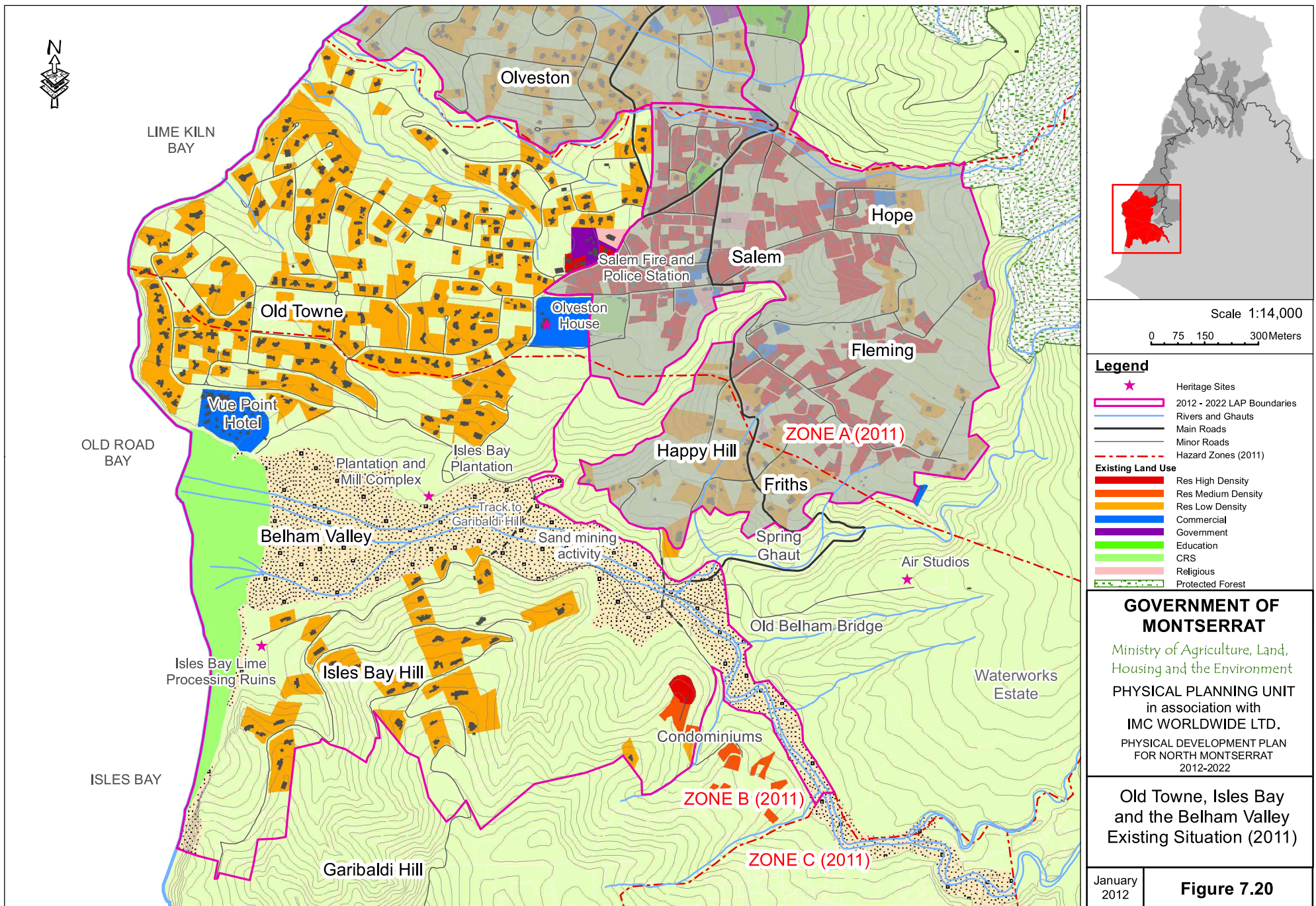
Infrastructure and Services

The area was developed from the 1960s up to commencement of volcanic activity in the mid-1990s with a network of access roads in proportion to the scale of development. This has provided a pleasant and tranquil system of roads throughout the area. The PWD is officially responsible for maintaining the public roads, but its limited resources have to be carefully prioritised and this has left the areas at highest risk of volcano activity unattended for many years. The area is fully covered by water, power and telecommunications networks. However, the areas of Old Towne and Isles Bay experience some power outages.

Heritage and Environmental Features

The Local Area covers a number of very distinct land-use areas, each with quite unique characteristics. The large vegetation covered garden spaces of Old Towne and Isles Bay Hill have altered the natural distribution of plant species, providing a diverse habitat which has encouraged a range of bird types into the area. The riparian strips of the ghauts which traverse the Local Area provide their own unique and important environment and visual backdrop.

Towards the eastern limit of the Local Area, the forest has been categorised as "dry" and is dominated by Spanish Oak, Black Birch and Black Berry. The area around Spring Ghaut (Doctor Woods Road) is the sole remaining location in the Belham Valley area where the rare and endangered Montserrat orchid (*Epidendrum montserratense*) is found on old mango trees, other locations in the valley having been lost through volcanic action.



The Belham Valley floor has been completely altered by volcanic activity, associated flood events and sand mining activity. The eastern extent of the LAP valley area, above the access track to Garibaldi Hill is essentially devoid of vegetation. To the west of this access track the valley floor widens significantly and the shrubby vegetative cover is fairly dense, except in those areas which are active flow channels.

The mouth of the Belham Valley, with its brackish water lagoons, is an important area for wading birds, especially migratory birds which visit for feeding and resting from September through to early March. Towards the beach area at Isles Bay, a mosaic of dense *Prosopis/Mimosa/Acacia* scrub. This vegetation is of particular importance for Hawksbill turtles nesting habitat, and represents the most extensive area for this type of habitat in the whole of Montserrat. Also an important beach for nesting turtles the sand and scrub at Lime Kiln Bay.

Throughout the LAP area there are signposts to its history as a major plantation area and specifically lime processing. Notable heritage sites include Olveston House and Olveston House Airstrip where Leewards Island Air Transport (LIAT) was founded, the remains of a plantation and mill complex in Old Road Bay and the remains of a lime processing facility at Isles Bay. See Appendix F(1) for a description of these sites

In addition to matters relating to disaster risk, key issues affecting this LAP include the proliferation of loose and feral livestock which graze indiscriminately, poor waste management practices which encourage rats and other vermin and the dumping of major items, including scrap metal. Residents in this LAP area also have to endure the negative effects of sandmining in the Belham Valley. This will continue to be the case unless properly managed.

Disaster Risk

Old Towne, Isles Bay and the Belham Valley remain the most vulnerable of all north Montserrat settlements to further volcanic activity. The risk of catastrophic damage from pyroclastic flow or falling volcanic debris is considered by the MVO to be currently very low, but residents are more likely than other settlements to be inconvenienced by ashfalls. The MVO Hazard Level system states that Zone B is subject to 'controlled access' for Hazard Levels 4 and 5. It is important to note the most up to date Hazard Level, available at the MVO website (www.mvo.ms). The area is also at risk from hurricane and seismic events. The table below indicates local vulnerability to disaster.

Hazard	Vulnerability	Specific areas
Volcanic	medium	Zones A and B subject to controlled access at Hazard Levels 4 and 5
Seismic	medium	General
Hurricane / high wind	medium	Particularly tops of ridges and funnelled slopes facing east. The Belham Valley area is often subjected to high winds
Flooding	low	Run-off on slopes and where ghauts cross roads
Storm surge / tsunami	low	Limited areas close to sea level
Land slide / rockfall	medium	Lahars are a perennial risk along the Belham Valley

7.12.3 Development Opportunities and Constraints

Opportunities:

- Approximately 90 acres are available for development, not taking into account land ownership issues, based on the Developable Land evaluation in Section 5.
- A large number of empty houses and vacant lots are available to be renovated or developed with attractive situations and views.
- The area is suitable for holiday rental villas and guesthouses, subject to restrictive covenants.

Constraints:

- While there is currently unrestricted access to Zone B (at January 2012) it remains an area subject to rapid change in risk level, depending on the volcanic activity. The areas within Zone B are subject to controlled access when the MVO Hazard Level is at 4 or 5.
- The Belham Valley is subject to lahars (mud flows) during heavy rainfall and is an unstable and highly dynamic environment. The upper Belham valley may be subject to further pyroclastic flows. It is important to consider up to date information available at the MVO website (www.mvo.ms).
- There are a number of ghauts running through the area. These can be a cause of localised flooding. They are to be protected for their ecological and landscape value, and to mitigate the risks of flooding.
- A significant constraint to development is the reduced access to finance and insurance as bank and insurance companies provide very limited services to areas south of the Nantes River. Furthermore, the reluctance

of GOM and DFID to fund infrastructure in this area is constraining development and discouraging people from investing in the area. Government is working to address these constraints via the possible establishment of a specific Montserrat volcano insurance solution

- Road condition and capacity hinders access to many local areas, particularly to Isles Bay and Garibaldi Hill as the Belham valley is a highly changeable obstacle.
- All development is subject to restrictive covenants.

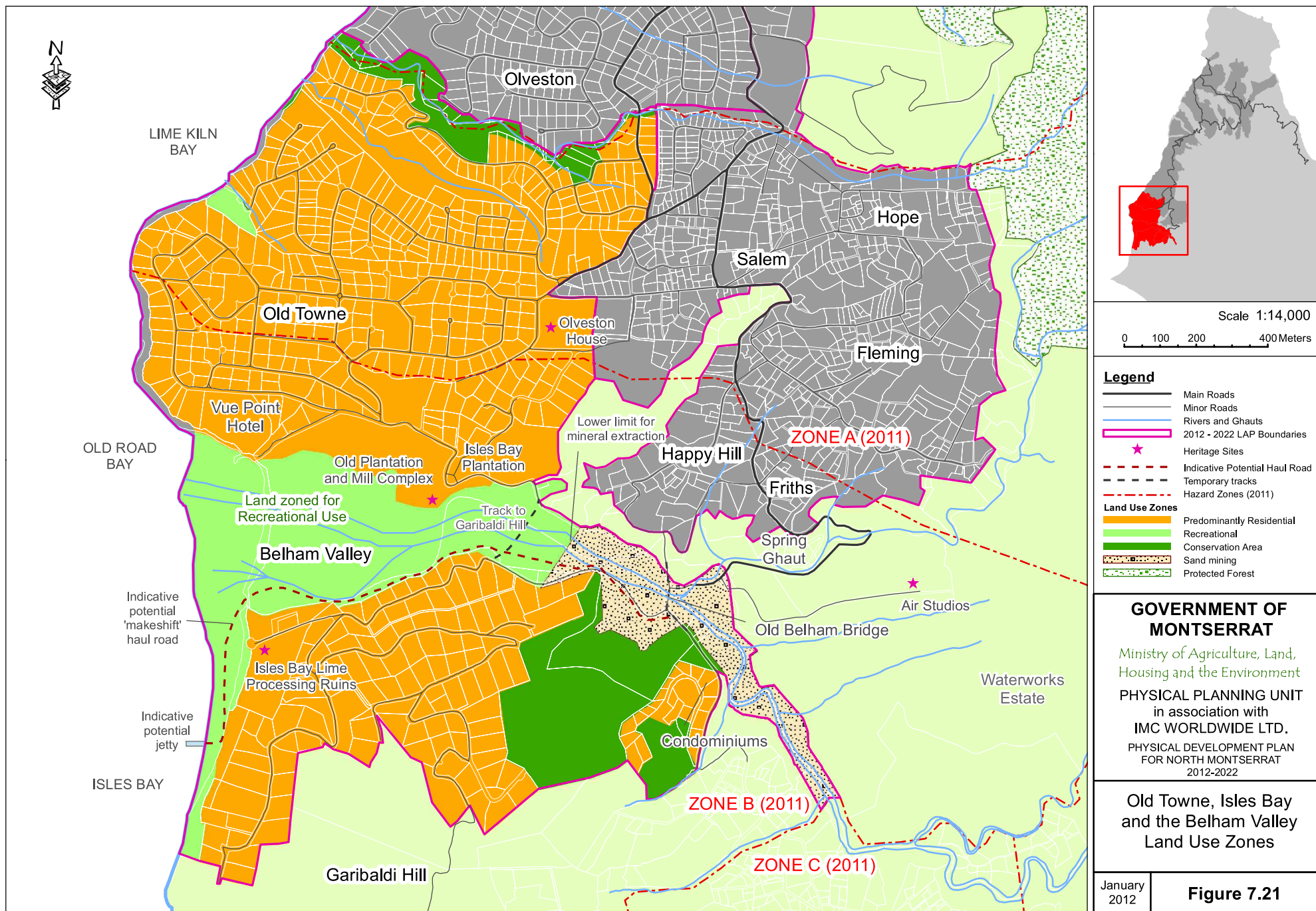
7.12.4 Policies and Proposals

General Strategy

It is important that this area is well managed to allow residential areas to recover and increase their significant contributions to the island's economy. It is expected that the existing residential land use will continue to grow, via infilling of the areas, during the plan period to 2022. The Vue Pointe Hotel will be encouraged to reopen and will provide a much needed economic boost to the area and the island. It is not expected that residential areas east of Garibaldi Hill in Zone B or beyond the access gate to Zone C, will become inhabitable within the plan period.

Sand mining will be permitted to continue further up the Belham valley in a well-planned and regulated manner such that adverse impacts on neighbouring residential areas are minimised. The principal mitigation measure to minimise negative impacts from sand mining is to separate, as far as practicable, the mining activities from the residential areas and tourist accommodation. A lower mining limit has thus been designated by Government and will be enforced. This solution will provide additional revenue streams to Montserrat's economy while enabling the island to benefit from increased residential developments, including the Isles Bay Plantation, Isles Bay Hill and other areas in the proximity of the Belham valley.

An important consideration is from which point sand will be exported from Montserrat. In 2012 several potential options are being evaluated and the option within this Local Area has been indicated in Figure 7.21.



Policies

Policy LAP10.1 - Residential development will continue to be encouraged throughout the areas of residential sub-divisions, as indicated in Figure 7.21.

Policy LAP10.2 - Residential and commercial accommodation, including the Vue Pointe Hotel and other accommodation establishments are encouraged to develop within the LAP area. All applications will be considered on a case by case basis and will include public consultation where they represent a breach of the covenants.

Policy LAP10.3 - Applications for commercial activities, such as restaurants and small food-stores, will be assessed on a case by case basis and considered favourably when they add social or community value to the area. [**Policy H3**]

Policy LAP10.4 - Land is allocated for recreational use between the shore line and the lower mining limit, as illustrated in Figure 7.21.

Policy LAP10.5 - Land is designated for general mineral extraction, including sand mining in the upper Belham valley, as illustrated in Figure 7.21. Mineral extraction, processing or stockpiling is not permitted downstream (west) of the lower mining limit.

Policy LAP10.6 - Efforts will be made to minimise the effects of the export of material from sand mining in the Belham valley, taking into consideration the nature of local guesthouse/hotel and restaurant businesses, residential accommodation and other approved land uses. To this end, all sand mining activities are subject to the provisions of the *Health, Safety and Environmental Management Guidelines for Sand Mining in Montserrat: An Operational Plan for Reducing Environmental and Social Impacts* (2012).

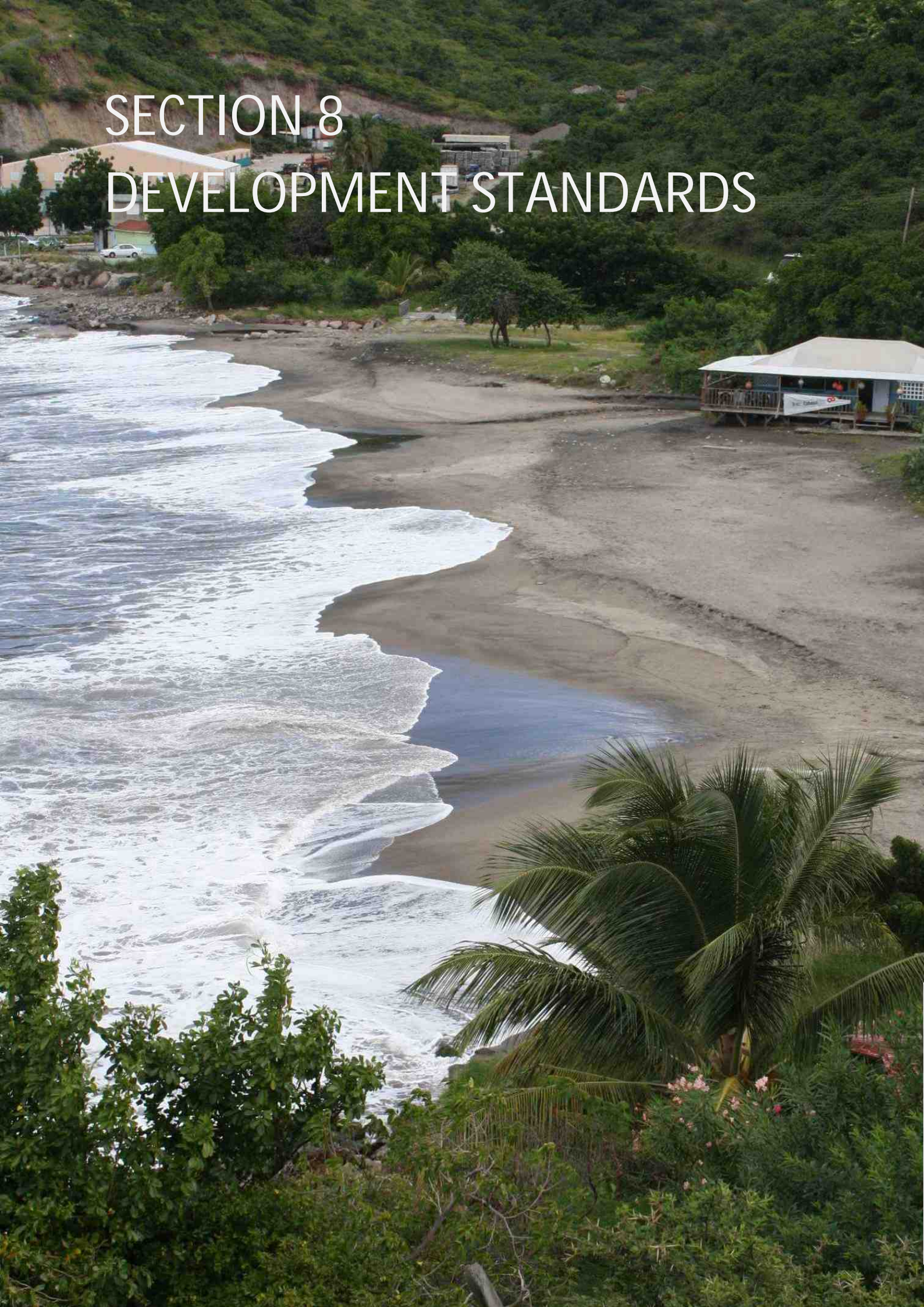
Policy LAP10.7 – There is a presumption against development in the conservation areas identified in Figure 7.21. These green buffer zones play an important ecological and flood mitigation role, and act as an attractive visual backdrop to many dwellings.

Policy LAP10.7 – Beach areas and their coastal zones are protected under the provision of **Policy EC10** (the provisions of the international Convention on the Protection of Migratory Species (CMS). The beach and coastal setback (as defined in the PDP *Development Standards*) provide valuable habitat for endangered nesting turtles, while the brackish waters of the lower Belham Valley provide habitat for many important species of migratory wading birds.

Infrastructure and Service Proposals

- Public roads will continue to be maintained by the PWD and road side vegetation trimmed appropriately.
- The water boreholes in the Belham Valley belonging to MUL will be adequately protected from sand mining and other activities.
- Utility services will be placed underground as far as possible
- Consideration will be given to communal wastewater systems depending on the size and density of communities and other relevant factors
- Any street lighting projects must include public consultation.

SECTION 8 DEVELOPMENT STANDARDS



8. Development Standards

These standards are presented for the guidance of landowners and developers and relate primarily to small-scale, residential and commercial development and infilling. Further guidance is available from the Physical Planning Unit (PPU). Planning standards for major development sites and non-residential uses will be given within developmental briefs to be prepared specifically for these sites.

Key Principles

All development on Montserrat needs to facilitate the sustainable use of resources (energy and water) and minimise waste, in particular solid-waste from buildings. Montserrat is well-endowed with natural resources in its supply of fresh water, renewable sources of energy and a continuous movement of air throughout the year. Through effective planning and planning controls the buildings and open spaces of Montserrat can use cost-effectively to their best possible advantage. This will enable Montserrat, its businesses and people to grow in an environmentally sustainable manner and make significant economic savings. Amongst the benefits of maximising on-island resources is that it improves the resilience of Montserrat and its economy from external shocks, such as a price rise in fossil-fuels, and will go a long way toward ensuring “clean” development.

Residential Lots and Sizes

Maximum permitted residential densities:

Density	Dwellings per acre	Plot size (sq. ft.)	Approx. sq. m. Equivalent
Low density	2 – 4	7,500 – 13,000	697 – 1,208
Medium density	5-10	4,500 – 7,499	418 – 696.9
High density	10-15	2,500 – 4,499	232 – 417.9

Setbacks and building lines

Building setbacks

These are the distances of the forward-most part of a building from the property which is kept free of buildings for the purposes of road widening, privacy, light, and fire prevention.

Front setback	-	Primary Road – 45 ft from centre line of road
	-	Secondary Road – 30 ft from centre line of road
	-	Residential Road – 25 ft from centre line of road
Rear setback	-	15 ft.
Side setback	-	10 ft.

Coastal Setbacks

Coastal zones are very fragile, especially in the Caribbean and any development within these zones must be located with care. The negative effects of development in the coastal zone include pollution of inshore waters, destruction of reefs and erosion of beaches. In addition, building too close to the shore line exposes any building to destruction from tidal and storm surge during tropical storms and hurricanes. Furthermore it can interfere with vistas and access and compromise the public enjoyment of the beach and the waterfront. In Montserrat, the beach below the high water mark is vested in the Crown.

The following set backs are recommended, based on advice from UESCO and the Sea Grant Programme of the University of Puerto Rico.

Cliffs	-	50 ft from cliff edge
Low rocky shores	-	100 ft from natural vegetation line
Beaches	-	60 ft from permanent vegetation line

Maintaining the high water vegetation line is critically important for migratory and resident nesting turtle populations.

Plot coverage

This relates to the proportion of a plot's area occupied by buildings, expressed as a percentage including that area of main buildings, out buildings and garages.

Maximum site coverage:

Residential areas	-	40%
Commercial areas	-	75%

Many residential dwellings comply with a set of regulations expressed in a Covenant, agreed to at the time of purchasing the property. These are to be enforced appropriately.

An additional storage area, of up to 5% of the total plot may be dedicated to waste bins that segregate refuse, bio-degradable kitchen waste, glass and other recyclables.

Building Heights

Maximum permitted building height

Residential buildings	-	2 storeys (on slopes 2 storeys and a basement will be permitted)
Commercial areas	-	3 storeys (town centre only, subject to satisfactory layout, design and siting)

Building on slopes

Special conditions:

- 50% of vegetation cover must be preserved or suitably replaced to avoid surface-water run off which leads to loss of soil and increased sedimentation in ghauts and along the coastline where this can damage coral reef
- Watercourse are to be preserved
- Anti-erosion devices and techniques should be implemented where necessary, including the use of vetiver-type grasses (see below) and silt traps.
- The walls of living spaces should not be built into slopes or used as retaining walls for slopes.
- Ensure the building is correctly oriented with no glazed openings facing West;
- Avoid building a tank or installation that contains water or waste-water further up the slope from an existing building.

Layout of subdivisions

Key Principles

- Subdivisions should not extend into ghauts which are protected conservation areas and owned by the Crown; unique buffer zones will be declared for each ghaut; until that time guidance must be sought from the PPU before any development application is prepared to ensure an appropriate buffer is reserved between developments and the top of ghauts.
- Plots should be laid out to take advantage of the topography and conform as far as possible to contours.
- Plot layout must take into account and minimise change to existing drainage patterns, and seek to preserve existing patterns of water flow.
- Plots must have a frontage onto access roads and this must be wide enough to allow vehicle access.
- Plot lines should as far as possible be perpendicular to streets to maximise available space. Corner lots generally need to be larger than standard plots.
- Plot width should not be less than 40ft.
- The layout of residential access roads should be such as to discourage through traffic from using them. The length of residential access roads should be kept to a minimum.
- Cul-de-sac-s (dead end roads) should serve no more than 20 dwellings. Maximum length 350 ft, or 600ft if emergency access is provided. Turning radius should be a minimum of 33 ft.
- 200 sq ft of public open space should be provided per dwelling on developments over 20 lots. For multi-family developments, 100 sq ft per apartment unit and 300 sq ft per semi-detached, town house unit should be provided.
- Access must be designed to ensure adequate visibility and include provision for vehicle turning spaces on the plot.
- In future it may be permissible to install a micro-hydro energy unit on water streams running through your site. [The PPU or an appropriate department will issue details of the specifications and regulations for such installations]
- The layout of sub-divisions should permit access and turning space for vehicles to the following: installations: Septic tanks; Rainwater storage; Refuse containers; Recycling containers; On-site wastewater treatment.

- [The PPU or a relevant department will issue details of vehicles in use and relevant access requirements]

Hydrology and Storm Water Management

Storm water drainage

A plan for the layout of storm water drainage should be prepared for each development, showing routes of pipes and drainage ditches, sizes of facilities, and the location of points of discharge. The Ministry of Communications and Works should be consulted at an early stage in the design process.

Vegetation Clearance

Unless otherwise approved by the Physical Planning Unit, there shall be no whole scale clearance of vegetation for development purposes. Maintaining vegetative cover is critical for soil and water management and for the cooling effects on the ambient environment. The degree of residual vegetative cover is site specific, but should be clearly indicated in applications for planning permission. It is anticipated that at least 30 percent cover will be maintained and will include retention of all mature trees.

Vetiver Grass for sediment control and soil preservation

Vetiver Grass (known in Montserrat as Sweet Grass) is a non-fertile, non-invasive Indian clump grass used extensively for soil stabilisation, erosion and storm water sediment control. Still propagated in Montserrat, Vetiver is central to a wide range of applications; generally installed as narrow linear barriers (hedgerows) its roots hold soil in place and dense ground-level stems restrain sediment flows. Unlike “hard” engineering approaches that weaken over time, Vetiver Grass grows stronger.

Physical Planning Unit will advise on requirements for use and advice on planting and maintenance can be obtained from Agriculture Department. In broad terms vegetative contour Vetiver Grass hedges will be employed in the following situations and locations;

- Between and on the perimeter of agricultural plots to protect crops;
- On the boundaries and perimeters of new residential and commercial lots;
- On all steep cut slopes.

Permeable/Porous Paving Surfaces

All parking bays, hard standings and footpaths requiring a hard pavement surface should utilise permeable/porous materials. There is no restriction on the system adopted, but preference in residential areas will be given to precast cellular block paving. In commercial areas spaced paving or porous surface paving may be utilised.

Since porous pavement is an infiltration practice, it should not be applied at stormwater hot spots due to the potential for groundwater contamination; these include potential recycling or waste collection areas, garages or vehicle service areas and fuel stations

Roads

Road Hierarchy

- Class I - Primary / Major Road (A01 to A04)
- Class II - Secondary Road (B01 to B04)
- Class III - Residential access road (All C roads)

See Figure 2.8 in *Section 2.8*.

Proposed rights of way and carriageway widths

Road type	Min. Right of Way*	Carriageway width	Reserve (each side)
Class I	50 ft.	24 ft.	13 ft.
Class II	35 ft.	20 ft.	7.5 ft.
Class III	29 ft.	16 ft.	6.5 ft.

*The total width of carriageway and the reserve each side of the carriageway

Road reserve is for utilities, shoulders and sidewalks. Utilities should be placed as far away from the carriageway as possible.

Road gradients

Road gradients and widths should allow service and maintenance vehicles to travel with ease, turn around at regular intervals and be recoverable by another vehicle in case of breakdown.

For major and secondary roads:

- Minimum slopes - 0.5% (6" in 100ft.) to facilitate drainage
- Maximum slopes - 10% for long stretches.
15% on short stretches not exceeding 200ft.
- Cross slopes - 1 ft. in 8 ft.

For residential access roads these standards may be relaxed

Footpaths - Maximum gradient 1:16 %) Minimum width 4 ft.

Intersections

Intersections of more than two roads should be avoided where possible, unless joined by a roundabout.

Intersections should be at 90 degrees wherever possible. The minimum permitted angle is 70 degrees. The alignment should be maintained at least 100 ft. from the intersection

Where access or secondary roads intersect with primary roads, cross over junctions should be avoided. Intersections should instead be staggered with a minimum distance of 130 ft. between intersections.

Junctions near the brow of a hill or where the driver visibility is obstructed should be avoided.

Visibility at junctions

Road type	Visibility Splay	Splay distance
Class I	30 degrees	12 ft.
Class II	30 degrees	10 ft.
Class III	45 degrees	6 ft.

Parking

Car parking areas should be at least 300 sq ft inclusive of driveway.

Parking bay dimensions should be 18ft. by 8ft., except where parking is parallel to the kerb where 22ft. should be allowed.

Except for polluting land uses, all parking areas should utilise permeable paving to allow natural drainage.

The following standards should apply to specific development types:

Shops	1 per 500 sq. ft. gross floor area
Offices / banks	1 per 700 sq. ft. gross floor area
Restaurants	1 per 50 sq. ft. public dining space
Industrial	1 per 5000 sq. ft.
Warehousing / storage	1 per 1000 sq. ft. (in excess of 5000 sq. ft.
Hospital	1 per 4 beds
Museum / library	1 per 700 sq. ft. gross floor area
Cultural facilities	1 per 100 sq. ft.
Recreational facilities	1 per 100 sq. ft.
Meeting hall / Church	1 per 10 seats
Single dwelling units, duplexes and town houses	1 per unit
Apartments	1.25 per unit
Hotels	1 per 3 rooms (plus restaurant provision)

Adequate provision should also be made for deliveries, unloading and loading, according to individual development requirements.

For all road access and parking matters, early consultation should be held with the Ministry of Communication and Works

Electric charging points may have to be provided in public areas for charging electric vehicles. This is dependent on the successful implementation of geothermal energy.

Mobility and access

Montserrat can be a difficult place for the elderly and for people with disabilities, due to the steep topography. Public areas and tourism facilities will benefit from full consideration given to mobility and access issues to accommodate the elderly, infirm and the disabled.

When designing a new development, access for emergency vehicles (fire and ambulance) must always be considered. Consideration is also to be given to how 'hurricane shelters' can be reached during an emergency.

Outdoor spaces

Shade from trees and buildings should be maximised in outdoor areas to provide comfort to users. Hard paved surfaces should be minimised.

Landscaping, plants and grasses

Montserrat can provide an excellent environment for vegetation to grow. Natural vegetation (Trees, shrubs, grasses) should be carefully planned in the design of sites. The correct choice of species and its location can provide advantages in keeping the building and outdoors comfortable, shelter against wind, stabilise the ground and provide fruit and useful organic material.

Vegetation Clearance in Northern Foothills of the Centre Hills

All new lots and sub-divisions in the foothills of the Centre Hills (as defined in Figure 2.2 of this PDP) will be subject to a site survey by the Department of Environment. The purpose of this survey is identify, protect and propagate important range restricted and endemic plant species, either through transplantation or through integrated landscaping.

Transportation of Soils and Organic Material

Fire Ants and invasive invertebrate and flora are rapidly transported through replacement soils. Developers of new plots will employ soil management techniques to ensure top soils remain in-situ. Any import of topsoil will be inspected prior to transportation from site of origin by Environmental Health Department and certified safe for transport. All open vehicles used to transport organic material will be covered using suitable waterproof tarpaulin type material.

Sewage disposal

All development proposals should be referred to the Environmental Health Department and the Ministry of Communications and Works. For all major developments site layouts incorporating drainage and access provisions should be prepared. Where septic tanks are proposed these should show means of access and include proposals for maintenance and supervision.

As a general rule for residential developments where the density is over 1 dwellings per acre and the population exceeds 200 persons, a central collection system should be provided. Consultation should be held early in the design stage with the Environmental Health Officer and requirements will be made according to individual site characteristics.

In the future it may be permissible to install a waste-water recycling and treatment unit on individual sites. [The PPU or an appropriate department will issue details of the specifications and regulations for such installations]

Septic tanks

The capacity should be at least 750 US gallons

The location should be not less than 10ft. from any dwelling and not less than 100ft from any drinking water source.

There should be adequate access for cesspit emptying vehicles.

Construction and operation details are given in the Montserrat Building Code.

Water supply and Water Efficiency

The following principles should be observed

- Where the water supply is from a public main, adequate land should be reserved for a storage tank of required capacity
- Plans are required to show the water reticulation system within the development. Montserrat Water Authority / Montserrat Utilities Ltd. (MUL) should be consulted at an early stage and will indicate the minimum size of pipes requires
- Water storage cisterns should be provided wherever possible

- Fire hydrants should be provided in accordance with the specifications of the Fire Officer.
- All pipes should be located in the road reserve. There should be no cross connection between potable and non-potable supplies.
- Rainwater harvesting: all government buildings should be fitted with rainwater harvesting equipment; residential and commercial property owners will be encouraged to do the same.

Rainwater captured through roof or open storm water drainage should be channelled into storage tanks through filters so that ash can be prevented from entering storage tanks. These filters and storage tanks should have good access for cleaning and maintenance.

Power, Telecommunications, Energy Efficiency and Appropriate Building Design

Utilities

Consultations should be held with Montserrat Utilities Ltd (MUL) and Cable and Wireless at an early stage. All services should be placed underground as a precautionary measure to mitigate the risk from extreme weather events and to safeguard environmentally sensitive areas. Adequate land must be reserved for substations as specified. Street lighting should be provided ensuring that the location of poles do not impede driver visibility.

Energy Efficient Building Design

Air conditioning use should be reduced by provision of opportunities for natural ventilation. The following minimal measures should be considered for natural ventilation to be effective:

- Provide ceiling heights of 9'6" or greater to allow for stratification of interior air where possible;
- Provide upper and lower windows to facilitate ventilation;
- Design the building envelope and facades to maximise energy performance. North-East facing openings should be designed to draw in the breeze; North or North Facing windows are ideal to bring natural light into a building. The Southern and West faces of a building should be sheltered and shaded by trees and other vegetation. [Note that slopes can

influence and change the direction of wind so an understanding of the specific site character is important to correctly orient the buildings.

Solar Water Heating

Solar Hot Water installations are encouraged in all types of buildings particularly those that use large quantities of hot water for bathing.

Volcanic Ash

Note that the following guidelines are designed to supplement existing building codes:

- Complex roof profiles or geometry should be avoided, such a parapets or roof tanks which may lead to a greater accumulation of ash next to these features
- Preference should be given to smooth materials which are more likely to shed volcanic ash than roofs made of rough materials like asphalt
- Building's down-spouts and drains should be able to be disconnected from the roof gutter before or immediately after an ash fall to prevent ash from entering the drains and wastewater system;

Hurricane

Note that the following guidelines are designed to supplement existing building codes:

- The integrity of the building envelope including roofs and windows should be maintained;
- Protect all the windows and doors by covering with hurricane shutters and bracing where ever possible;
- Exterior doors and windows should open outwards;
- Food trusses and gables must be braced;
- Hurricane straps must be used to strengthen the connection between the roof and walls;
- Windows could have either plastic panes, shatter-proof glass or glass with protective membranes.



Appendices



APPENDIX A

Planning Process Guidelines

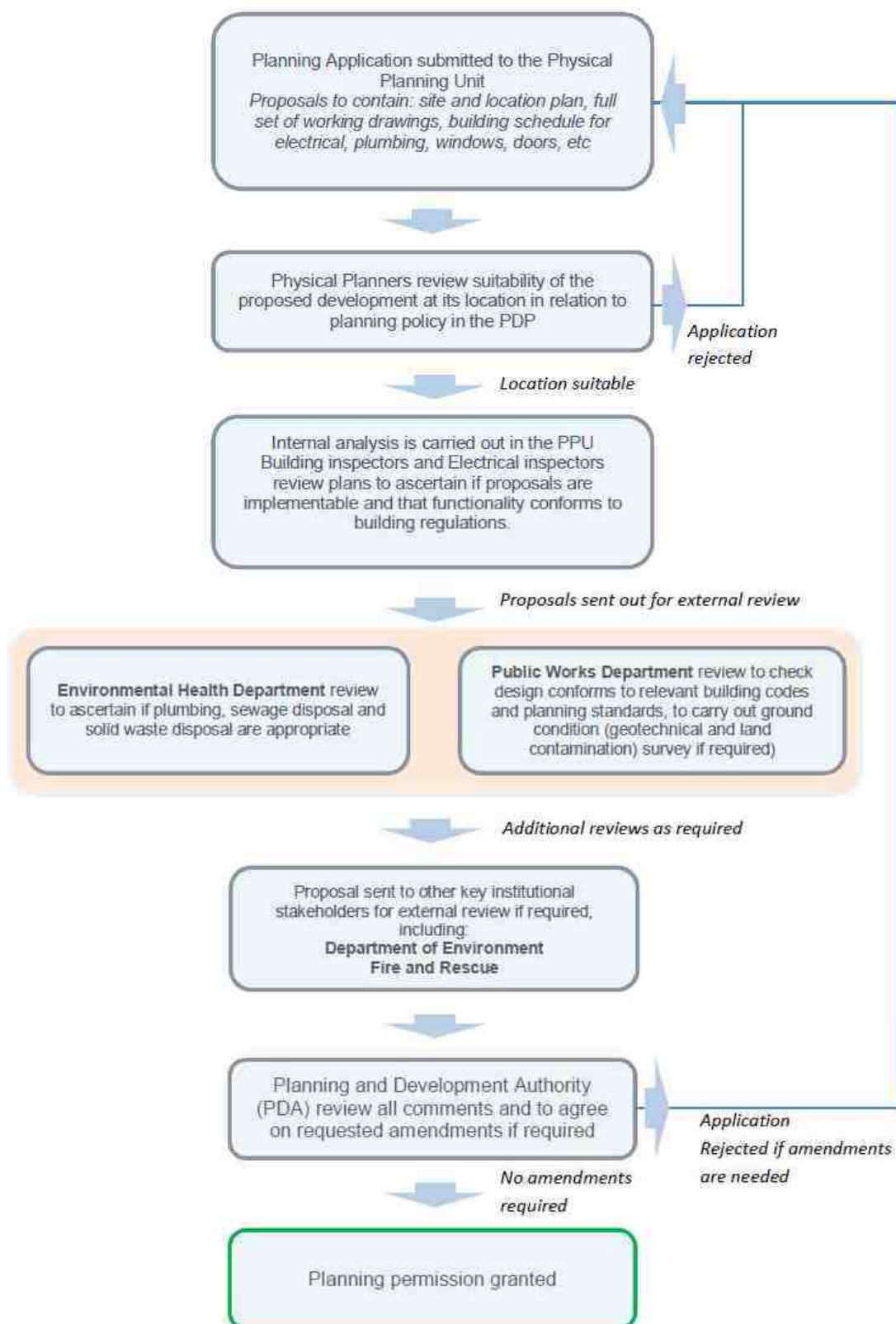
The planning process is what guides the shape and direction of development in Montserrat. The process is designed to ensure that Montserrat does not develop in an unplanned and uncoordinated manor which may compromise quality of life and the attractiveness of the island in the future. The process also seeks to ensure that appropriate development standards are in place with regard to building design integrity, disaster risk reduction, parking, and many other details.

The planning process is managed by the Physical Planning Unit (PPU) and exceptional decisions are made by a committee meeting of the members of the Planning and Development Authority (PDA).

The flow chart below sets out the main steps to acquire planning permission for new developments.

Please note that there is a separate procedure for Little Bay developments, available at the Physical Planning Unit and the Montserrat Development Corporation (MDC).

Figure A1 Procedure for Review of Planning Applications



APPENDIX B

Planning Assumptions in Updating the PDP 2012-2022

The following assumptions have been made in updating the PDP:

Economic Outlook

- The global economic situation during the next ten years will gradually improve, providing increasing opportunities for the establishment of local businesses with export opportunities and the provision of financial, IT and other services.
- Montserrat will target high-end, low-volume tourism and this will guide the planning and design of developments at Little Bay and Carr's Bay, as well as improvements to air and sea access.
- It is anticipated that the next phase of Little Bay and Carr's Bay developments, and improvements in air and sea access will be undertaken during the first few years of the plan. There will therefore be a lead-in period of at least three years before any substantial growth in population and tourism figures are realised.
- Members of the Diaspora and international visitors will be able encouraged to invest in businesses and villas in Montserrat.

Population

- Economic activity on island will increase in line with projections, leading to significant increases in well-paid jobs and improvements in living standards that will attract members of the diaspora and non-Montserradians to come to work and live on the island, leading to sustainable increases in resident population.

Sea and Air Access

- A breakwater will be developed at Carr's Bay suitable for small to medium sized cruise ships, large yachts, the ferry and cargo vessels.
- The capacity of Gerald's airport will be maximised via reintroduction of a Twin Otter service, structural improvements to the terminal building and its changes to passenger operations management.
- A faster and more comfortable ferry service will be implemented encouraging local and visitor travel and day trips to/from Antigua.

Little Bay and Carr's Bay

- The 2009 master plan is being revised to create a new capital town for the island and economic opportunities in support of social development. The revised master plan is likely to encourage private sector investment in a hotel, development of the waterfront and existing jetty. Additional niche facilities under discussion include new music entertainment facilities and a bio-diversity centre. It is anticipated that most of the new development will be completed by 2016, although some demand-led items such as villas may take a few more years.
- Public sector investment in the Little Bay area will be limited to necessary public infrastructure and government buildings
- Plans will be prepared in 2012 for development of Carr's Bay with a breakwater and port, for small- to medium-size cruise ships, the ferry, cargo vessels and local fishermen. The development will also include sufficient port operational area (for container-handling and other cargo), and buildings along the waterfront to create part of the new town.
- The existing road along the seafront at Carr's Bay will be maintained and flood-protection works will be carried out to the fuel depot.

Infrastructure

- Geothermal energy will be successfully harnessed and consumer costs will be significantly reduced with consequent positive impacts on existing businesses and livelihoods, as well as encouraging new investment in the island such as ICT operations, agro-processing, etc.
- Fibre-optic links will be re-established installed between Montserrat the Caribbean regional networks, via Guadeloupe and St Kitts.

Recurrent Budgets

- It is assumed that GOM will continue to receive budgetary aid from HMG throughout the plan period, but the recurrent budget will begin to improve once Little Bay, Carr's Bay, and other economic developments begin to deliver increased revenues, possibly around 2016 onwards.
- While the recurrent budget remains weak, during the first half of the plan, the Public Works Department will be unable to fully address the maintenance needs of public infrastructure and government buildings. The situation should improve once recurrent budget revenues increase, but there will be a need for capital budget programmes to rehabilitate items that will have deteriorated in the interim period.

Volcanic activity

- No permission will be given during the plan period for residents to move back into the current Hazard Zone areas C, F, V, T. Entry to zone C will be permitted for geothermal activities and perhaps some operations related to sanding mining.
- The boundaries of Zones A and B will remain roughly as they are will continue to be safe for residency purposes. Public investment in Salem and the surrounding area will encourage suitable economic activities and population growth.

Environmental Issues

- The protection of the Centre Hills, all ghauts and other designated areas will be enforced and suitable buffer zones will be provided by way of selected eco-tourism developments that will be carefully managed.

Public Service

- Government will actively promote development of the private sector via domestic and inward investment in new businesses, which will facilitate the planned restructuring of the public service and an increase in the proportion of jobs provided by the private sector.

APPENDIX C

Population Projections

In 1991 the population of Montserrat was 10,625. By 1993 it had reduced to 10,481, continuing a downward trend in population since 1946 associated with outward migration as Montserradians sought opportunities overseas. The commencement of volcanic activity in July 1995 led to a dramatic reduction in the base population. By the end of 1997 it was down to 4,111. Since the late 1990s the population has recovered slightly and fluctuated between 4,500 and 5000. In 2006 the population was 4,886 and in the 2011 census recorded a total of 4,882.

It is projected that the population will begin to steadily increase as current development initiatives start to deliver good job opportunities that will attract some Montserratian diaspora and other nationalities to the island. Economic development initiatives and the resulting job opportunities were produced by the Consultant in consultation with the Ministry of Economic Development and Trade, as explained in *Section 3* of the PDP. This provided the basis for projecting the likely island population over the next decade. The larger initiatives include the Little Bay and Carr's Bay breakwater and port, improved sea and air access to boost tourism and inward investment, and the reconnection of Montserrat to the Caribbean regional fibre-optic telecommunications networks. Much of the anticipated population increase is expected to happen during the second-half of the plan period.

The total population for future years was further broken down by community to assess where throughout north Montserrat the new residents could be accommodated. This considered the amount of space available in each community at existing dwelling densities and at agreed densities for new residential areas, such as Little Bay.

Table C1 shows the resulting population projections per community at the plan period mid-point of 2017 and the planning horizon of 2022. Housing land area requirements are also tabulated that correspond to the number of dwellings for the projected population and the noted dwelling densities.

Table C1 Projected Population by Community (NE to SW across north Montserrat)

Settlement Area	Proposed Density	2011 Population (tbc)	Growth 2011-2016 (%)	2016 Population	Growth 2016-2020 (%)	2022 Population	2022 Housing land area requirements (acres)*
Lookout	medium	583	20	700	20	700	7
Judy Piece / Dick Hill	medium	228	40	319.2	80	410	11
Blakes Estate	low	0	na	20	na	110	25.
St John's / Mongo Hill	high/medium	251	40	351	80	452	9
Barzey's	medium	91	50	137	100	182	5
Gerald's	high/medium	114	30	148	100	228	5
Drummonds	high/medium	98	30	127	80	176	4
Little Bay/Carr's Bay	high/medium	0	na	50	na	600	27
Davy Hill North 1	high/medium	338	30	439	70	575	11
Davy Hill North 2	high/medium	231	30	300	70	393	7.5
Davy Hill South	high/medium	224	35	302	70	381	7
Brades	high/medium	391	40	547	80	704	14
Cudjoe Head	high/medium	146	35	197	70	248	4.6
Nixons / Banks	high/medium	143	35	193	70	243	4.6
Baker Hill	high/medium	262	30	340	50	393	6.0
St Peter's	medium	430	40	602	120	946	29
Woodlands	low/medium	216	35	292	70	367	14
Olveston	low/medium	356	35	480	70	605	23
Salem East	high/medium	189	25	236	80	340	9
Salem West	high/medium	259	25	324	80	466	12
Friths / Fleming	high/medium	172	25	215	40	241	4
Isles Bay / Happy Hill	low/medium	68	10	74.8	20	81.6	1.5
Old Towne	low/medium	96	10	106	20	115	2
Old Quaw	low	0	na	0	na	50	11
TOTAL		4886		6,502		9,007	234

*Additional land requirements to existing (2011) housing

APPENDIX D

Consultation Process

Developing the PDP through Stakeholder Consultation

Updating the national Physical Development Plan for the period 2012-2022 has been based on a process of extensive stakeholder consultation. Stakeholder consultation has allowed the project team (comprising senior representatives of the Physical Planning Unit and the Consultant's project staff) to understand the issues and concerns of all stakeholders, to understand and estimate their land use and infrastructure requirements, and to seek consensus in planning for the future. It has also enabled the team to identify important issues and to untangle several contentious issues related to land use planning. Public consultation also ensured that everyone in Montserrat and members of the diaspora have had an opportunity to review the draft document and to endorse or object to certain elements of the strategy. Notes for all meetings are held on file and are available on request.

In accordance with the provision of the Physical Planning Act (2002), the final decision on the content of the PDP rests with the Planning and Development Authority (PDA).

Stakeholder Analysis

The process of updating PDP began in March 2011 and consultations were held in several rounds up to December 2011. Initial consultations, while developing the draft document, were held with representative of government departments, the private sector, NGOs, the general public in Montserrat and the UK, and special interest groups. These initial consultations provided an insight to the status and role of various stakeholder groups, their degree of interest in the updated Physical Development Plan (PDP), and the degree of influence they might have in formulating its content. This helped to design a public communication and awareness-raising strategy.

Key stakeholders

The list of key stakeholders is provided in *Appendix E*. This list was used as the basis for the detailed stakeholder analysis and design of the public communications plan. Importantly, it also enabled the team to understand the current situation in Montserrat as outlined in Section 2 of this document and in the Baseline Report of the Strategic Environmental and Social Assessment (SESA). Consultations with the key stakeholders also helped the team to identify the issues and concerns that they have in relation to the development of Montserrat.

Consultation for Local Area Plans

As part of the Physical Development Plan (PDP) 2012-2022, Local Area Plans have been prepared for each of the main settlement areas, as defined in Section 7 – Local Area Plans. Separate consultations were undertaken in each community in order to gain a full understanding of each community's issues, current needs, likely future requirements and general social and economic conditions..

The approach taken was to hold one-to-one meetings with several key individuals from each area followed, several weeks later, by an open community consultation forum to help fill in any knowledge gaps and to consolidate the team's understanding of the issues pertinent to each area.

Key individuals were recommended to the team by members of the Physical Planning Unit and were generally those who have a connection to existing residential action groups, or those who are well connected to the community through an existing or former role such as a teacher, business owner or government employee. These individuals were also consulted on how best to hold an open consultation forum for their respective community and asked to provide assistance in advertising the event and encouraging residents to attend.

While a Local Area Plan was not originally thought necessary for the Beachettes Area comprising Isles Bay, Old Towne, Olveston and Woodlands, a consultation meeting was held in July 2011. Two additional LAPs were then added to the Final PDP due to public demand. Policy was based on the issues raised at this consultation meeting as well as from more focused meetings throughout the PDP process.

All public consultation events were advertised on ZJB Radio Montserrat, in the Montserrat Reporter newspaper, on posters in local shops and venues, and by direct phone invitation to selected 'key' people. Meetings were held in local venues to avoid transportation difficulties and to encourage people to attend. Meeting times were agreed with local representatives avoid clashing with other local events and at times most convenient to local residents.

Focus groups to understand issues affecting particular stakeholders

In parallel to the local meetings, a series of focus groups were held to understand the island-wide concerns, issues and suggestions of a number of special interest groups. These include cross-cutting issues that influence the LAPs. The most significant are:

- The Farmers Association (agricultural areas, access and infrastructure, livestock etc.

- The Fisherman's Association (fish stocks, facilities on the land, the need for a harbour etc)
- The Chamber of Commerce (business opportunities and constraints, likely developments in the future)
- The Montserrat Rotoract Club (youth affairs, employment opportunities, recreation etc.)
- The Montserrat Christian Council
- Representatives from the Spanish-speaking community

Review by the PDA and Ministers

The first draft of the PDP 2012-2022 was completed by the 24th August 2011. The draft was presented to members of the Planning and Development Authority (PDA) on 25th August and to Ministers on 26th August, after which they had a month to closely study the document and for amendments to be agreed on and incorporated by the project team into the Draft PDP. During the following month the updated draft PDP was reviewed by Permanent Secretaries and heads of relevant government departments to ensure alignment with their departmental development plans (which comprise detailed implementation plans of Government's overarching Sustainable Development Plan). Again, amendments were agreed on and incorporated into the Draft PDP prior to commencing the statutory public consultation.

Public Consultation

As stipulated in the PPA (2002) the public consultation comprises a 60-day period, during which the document must be published for public scrutiny. The public may make their representations during this period to the PDA.

The public consultation period was launched with an exhibition on 24th October 2011 and facilitated via the Physical Planning Unit website which was created especially for the purpose, but will continue to be used as a planning forum. The physical development strategy and the relevant Local Area Plans were presented and the implications explained. The draft PDP was also available in hard copy format at several key government offices and the public library.

Upon expiry of the 60-day period, the PDA determined which representations it wished to address by way of final changes to the draft PDP. In accordance with the provision of the Act, the final version of the PDP was then submitted via the Minister responsible for physical planning to Council for approval.

APPENDIX E

List of Consultees

Ref	Stakeholder	Stake/Mandate (legal, livelihood, recreational etc)
1.0	Government and Institutional Stakeholders	
1.1	Strategic Direction	
1.1.1	Office of Chief Minister	Administrative & Legal: strategic leadership and coordination of Government of Montserrat (GoM) stated plans and programmes across ministries, departments and the wider community – guidance on the implementation of the SDP
1.1.2	Governor's Office (FCO)	Administrative & Legal: Constitutional responsibility for external affairs, defence, internal security, the administration of the Courts, the financial services sector, elections and disaster management – also working to enable increased level of economic self sufficiency
1.1.3	DFID	Administrative & Legal: Committed to wellbeing of Montserrat citizens and provision of "reasonable assistance" towards a reduction in aid dependency
1.1.4	Physical Development Authority (PDA)	Administrative & Legal: Mandated to produce the PDP setting out land use and development for Montserrat and overseeing all development thereafter
1.2	Min of Agri, Land, Housing and Environment	
1.2.1	Physical Planning Unit	Administrative & Legal: Mandated Government Department – lead role in PDP delivery
1.2.2	Department of Agriculture Agri: Division	Administrative & Legal: Mandated Government Department for Agriculture – lead role in developing this sector (crops and livestock)
1.2.3	Department of Agriculture Fisheries Division	Administrative & Legal: Mandated Government Department for Management & Protection of Marine resources (including management of fisheries and aquaculture)
1.2.4	Department of Environment	Administrative & Legal: Mandated Government Department for Environmental Management & Protection – Planning and Enforcement
1.2.5	Department of Lands and Surveys	Administrative & Legal: maintenance of land registration system, survey and mapping
1.2.6	Housing Department	Administrative & legal: developing and administrating housing policies to address all housing needs & to build housing market
1.2.7	Montserrat Land Development Authority	Administrative & legal: master planning and oversight of land settlement schemes; management of government land and housing
1.3	Ministry of Communications, Works & Labour	
1.3.1	Public Works Department	Administrative & Legal: responsible for design, construction and maintenance of government infrastructure including roads and buildings & support for disaster management & utilities management
1.3.2	Montserrat Port Authority	Administrative & Legal: management of Montserrat Port

Ref	Stakeholder	Stake/Mandate (legal, livelihood, recreational etc)
1.3.3	Geralds Airport	Administrative & Legal: Operational management and maintenance of airport
1.3.4	Labour Department	Administrative & Legal: Industrial relations, workers rights & employment; work permits (with immigration); OHS
1.3.5	Montserrat Utilities Limited	Administrative and Legal: design, management and maintenance of all water and power infrastructure; sewage disposal as required
1.4	Ministry of Education	
1.4.1	Early Childhood Sector	Administrative and Legal: Education – childhood learning and support
1.4.2	Primary School Sector Teachers Pupils Parents	Administrative and Legal: Education – childhood learning and support
1.4.3	Secondary School Sector Teachers Pupils Parents	Administrative and Legal: Education – childhood learning and support
1.5	Montserrat Community College	Further and Vocational Education Supplier
1.6	UWI Open Campus	Further and Vocational Education Supplier
1.7	Ministry of Health	
	Primary Health Care	
1.7.1	Epidemiology	Administrative and Legal: Health – preventative services and & promotion of positive lifestyle choices
1.7.2	Health Promotion	
1.7.3	Environmental Health Services	Administrative and Legal: Health - to enhance the health of the community through management of landfill and waste collection
	Secondary Health Care	
1.7.4	Hospital	Legal: Health - address the diagnosis and treatment of illnesses in an attempt to cure or prevent further complications of existing illnesses
1.7.5	Clinics & Pharmacy	
1.8	Ministry of Youth Affairs, Community Services and Sports (MYACSS)	
1.8.1	Community Services Department	Legal: Community Services – social protection and welfare support to the vulnerable
1.8.2	Youth and Sports Department	Legal: Sports and Recreation, youth development programmes, helping young people prepare for employment; provision and maintenance of sports and coaching facilities
1.9	Ministry of Economic Development & Trade	Legal/Administrative/Policy : Development Planning; national & sector development strategies/donor liaison & financing/policy and plans for i)private sector development; ii)social policies aimed at poverty alleviation iii)strategic disaster risk mitigation and reduction; iv) Population policy and associated action plan
1.10	Office of the Deputy Governor	
1.10.1	DMCA	Legal: Disaster Risk Reduction – mainstreaming DRR into all sectors of the economy and government
1.11	Ministry of Finance	Legal: develop and implement economic, financial, accounting and IT policies, systems, procedures and programmes and secure and allocate financial

Ref	Stakeholder	Stake/Mandate (legal, livelihood, recreational etc)
		resources
1.12	Other Government	
1.12.1	Police	Legal: Law enforcement and disaster management
1.12.2	Fire and Rescue	Legal: Fire, search & rescue
1.12.3	Montserrat Defence Force	Legal: Emergency response & interventions in the event of civil disturbance
1.12.4	Montserrat Tourist Board	Legal, Economic, Tourism: Development and marketing of Montserrat's tourism product, including financing and maintenance of important infrastructure
1.12.5	Montserrat Development Authority	Development Partner: limited liability company owned by GoM to encourage public/private investment in Montserrat – focus is development of Little Bay
1.12.6	Montserrat Volcano Observatory (MVO)	Legal: A statutory body of the GoM working to reduce impact of volcanic activity. Provides advice to GoM to ensure safety of all residents.
1.13	Parliamentary Opposition Members	Public Interest: Articulation of perceived needs and requirements of residents of Montserrat
2.0	Residents and Other Groups	
2.1	Environment	
2.1.1	Montserrat National Trust	Legal/Public Interest: protection of the environment and legal mandate for preservation of Montserrat's natural and historic sites. Leading NGO on Montserrat.
2.1.2	Just Do It	Recreational /Public Interest: Small NGO dedicated to local environmental improvements
2.1.3	Brown University	Third Party public interest – Archaeology and history: Survey and Landscape Archaeology on Montserrat project (SLAM) sponsored by National Geographic and implemented by Brown University USA.
2.1	Property Owners	
2.2.1	Montserrat Property Owners Association	Community Based Organisation seeking to raise awareness of local issues affecting property owners: advocacy and lobby group.
2.2.2	Belham Environmental Protection Group	Lifestyle/Economic: Community Based Pressure Group acting on behalf of property owners in vicinity of Belham Valley concerned about effects of PDP zoning process: advocacy and lobby group
2.2.3	Individual/Family Large Land Owners	Lifestyle/Economic/Cultural: a diverse group holding the key to the development of the island through their land ownership
2.2.4.	Individual Home Owners	Lifestyle/Economic/Cultural: diverse group ranging from expatriate villa owners to those in shared government ownership schemes
2.3	Community Based Groups	
2.3.1	Committee for the Redevelopment of Montserrat (CRM)	Economic/Livelihoods/Community Activists: Collection of influential Montserrat Citizens with a vision for the development of the island – fairness, equity and development by Montserrat for Montserrat
2.3.2	Rotary Club	Recreation/Charity/Community Welfare: Local champion of good causes help to the vulnerable members in society
2.3.3	WSG10	Community Welfare and advocacy from a female perspective: community based group
2.3.4	Red Cross	
2.3.5	Jamaican Association	Community support– social forum for Jamaican community
2.3.6	Guyanese Association	Community support – social forum for Guyanese community
2.3.7	Montserrat Christian Council	Faith based community support– social support and

Ref	Stakeholder	Stake/Mandate (legal, livelihood, recreational etc)
	and other faith based organisations	community development
2.3.8	Youth Groups	Recreation/economic: Ideas & social forum for young people: youth support/lobby/advocacy and
2.3.9	Mothers Association	Community support
2.3.10	Davy Hill Action Group	Social Development: Community based group lobbying for a better deal in Davy Hill (note other such groups exist around the island, but less organised)
2.3.11	St. John's Action Group	Social Development: Community based group lobbying for a better deal in St Johns (note other such groups exist around the island, but less organised)
2.4	Business & Livelihoods	
2.4.1	Small Business Association	Economic/Livelihood – represent/lobby the interests of small business community
2.4.2	Chamber of Commerce	Economic/Livelihood – represent/lobby the interests of small business community
2.4.3	Farmers (via Farmers Association)	Economic/Livelihoods –provides a forum for farmers to meet and discuss and to work with GoM as a single voice to promote agriculture on Montserrat
2.4.4	Fisherman (via Fishermans Co-operative)	Economic/Livelihoods –provides the only formal voice for fisherman on the island: a forum for fisherman to meet and discuss and to work with GoM on priority issues
2.4.5	Dive Operators – Green Monkey and Dive Montserrat	Economic/Livelihoods/Tourism Development: conservation of the reef and marine environment and associated revenue generation
2.4.6	Quarry/Mining Operators (inc truckers)	Economic/Livelihoods: wealth creation
2.4.7	Restaurateurs/Bar Owners/Shops & Grocers	Economic/Livelihoods: wealth creation
2.4.8	Taxi Drivers	Economic/Livelihoods: wealth creation
2.5	Local Media	
2.5.1	ZJB Radio	Public information
2.5.2	Montserrat Reporter Newspaper	Public information
2.5.3	P-TV	Public information
2.6	Key Population Groups	
2.6.1	Montserratian Residents	Legal/Livelihood/Health/Education/ Recreation: recipients and end users
2.6.2	Non-Montserratian Residents – Santa Domingo, (Dominican Republic); Haiti	Livelihood/Health/ Education/ Recreation: recipients and end users. Entitled to some say over the future shape of Montserrat
2.6.3	Non-Montserratian Residents – English Speaking	Livelihood, recreational: as residents of Montserrat entitled to some say over the future shape of Montserrat – end users of services and infrastructure
2.6.4	Montserratian Diaspora	Legal/economic/cultural/livelihood: legal citizens of Montserrat with economic, cultural & emotional ties to Montserrat (family, land etc) Stake and mandate varies by level of economic interest (i.e land ownership) on island
2.6.5	Elderly	Legal/cultural/economic – legal citizens of Montserrat: Diverse group - stake and mandate vary by level of asset ownership.
2.6.6	Recipients of Social Welfare	Legal/Livelihood/Health/Education/ Recreation: recipients and end users, dependent on government support
2.6.7	Residents in rented and	Legal/Livelihood/Health/Education/ Recreation:

Ref	Stakeholder	Stake/Mandate (legal, livelihood, recreational etc)
	temporary shelter	recipients and end users , dependent on government support
2.6.8	Mentally and physically disabled	Legal/Livelihood/Health/Education/ Recreation: recipients and end users , dependent on government support
2.6.9	Single Headed Households	Legal/Livelihood/Health/Education/ Recreation: recipients and end users , dependent on government support
2.6.10	Young Boys and Young Girls (>11)	Health/Education/ Recreation: recipients and end users - in trust of parents/adults – future of Montserrat
2.6.11	Youth (Boys and Girls)	Health/Education/ Recreation: recipients and end users – in trust of parents/adults – future of Montserrat
2.6.12	Unemployed	Health/Education/ Recreation: recipients and end users , dependent on government support
2.6.13	Day Tourist Visitors	Recreation:
2.6.14	Long Haul Tourists	Recreation: End users and
3.0	International Organisations	
3.1	Environmental (Active on Island)	
3.1.1	RSPB	
3.1.2	Durrell	
3.1.3	Birdlife International	

APPENDIX F(1)

Sites of Historic Importance

During the PDP update process an updated list of sites of Historic Importance was compiled in consultation with the Montserrat National Trust, the Montserrat Tourist Board and several independent archaeological survey groups working in Montserrat during 2011. According to Part IV of the Physical Planning Act (2002) the Montserrat National Trust is to take responsibility for producing a Historic Sites Record. Once complete, this record will supersede the list of sites below and mapped in Figure 2.3. Details of what the procedure involves are set out in Appendix F(2).

Site 1. Rendezvous village

An already known series of historical structures and other landscape features dating between the late 17th and mid 20th century, including houses, terrace walls, ponds, and water management systems (irrigation channels), spreading east to west along Rendezvous ridge. This is an important, and relatively well preserved, historical site and cultural landscape, important not least because of the intersection between archaeological and ethnographic data, and the possibility of using these in conjunction to better understand the dynamics of historic period settlements.

Site 2. Rendezvous mill complex

This site is an historical mill complex likely associated with Rendezvous village, in a relatively good state of preservation. Based on diagnostic ceramics collected at the site, the mill complex probably dates to the 19th century.

Site 3. Valentine Ghaut prehistoric site

This site is composed of a series of prehistoric house platforms and midden pits. AMS dates from one of the middens suggest a date for the site of AD 1050, which is further corroborated by the style of the ceramics. Excavation of both middens in 2010 and 2011 provided good evidence for the marine and coastal elements in the prehistoric diet, and for the production and consumption of cassava (manioc). Analysis of the ceramics also tentatively suggests a very local origin, as might be expected. This site, in conjunction with others, such as Indian Creek, is vital in understand the latter part of Montserrat's prehistory.

Site 4. Lookout Yard

This site is a series of very well preserved, sugar plantation remains, with intact standing structures and steam powered sugar boiling and processing equipment. The complex was renovated by Peg Hammond in the late 20th century, and the extant

buildings originally dates to the late 19th / early 20th century (though there may have been an earlier operation on this site).

Site 5. Carr's Estate

This site is the well-known historical plantation site of Captain William Carr in Little Bay. The site is enclosed by a modern fence and the property belongs to the Montserrat National Trust, who will integrate the remains into the new Museum. Remains of a manor house and other sugar processing / agricultural structures are preserved, and more have been exposed by excavation. This site has been recorded as the first post-contact plantation estate on Montserrat, and is known to have been active from the 17th to the late 19th century. I.

Site 6. Potato Hill

This site comprises the remains of 18th and 19th-century historical structures, and associated ceramics and glass. There is also evidence for possible prehistoric settlement on the hill. This site is under imminent threat of destruction as part of the Little Bay Phase 1 development.

Site 7. Silver Hill structures

Sections of mortared and faced walls on the summit of Silver Hill, with associated 18th and 19th century ceramics. While not as large as some of the plantation structures encountered, these might be the remains of the Silver Hill plantation (recorded on the Blathwayt Atlas).

Site 8. Old Road Bay plantation and mill complex

A moderately well-preserved historical plantation site, comprising sugar mill and its associated buildings. The site is at imminent risk of destruction by the volcanic activity in the Belham valley, and by increasing sand mining activity immediately adjacent to the site. Historical accounts suggest that these buildings were likely part of the Stappleton Estate, which dates to the 17th century.

Site 9. Woodlands Estate Yard

This site is the remains of a plantation near Woodlands, not as well-preserved as some other examples. A few structures are heavily overgrown.

Site 10. Davies Tomb / Rocklands

This site has both historic and pre-Columbian components. It seems to have functioned as a colonial period cemetery as evidenced by the Davies Tomb and other, unmarked graves to its north. However, there is also evidence for prehistoric activity, derived from both surface survey and test excavation. Considering the wealth of chipped stone artefacts and the absence of pottery, this may represent an Archaic period site (ca.2000-500 BC), otherwise unknown on Montserrat. If correct, this site would be highly significant.

Site 11. Rendezvous Bay site

A dense scatter of prehistoric ceramics near the ghaut suggests the presence of a prehistoric site, as does the possible existence of house platforms. Based on typological parallels from Valentine Ghaut, there is reason to suppose that this site, like Valentine Ghaut, was in use during later prehistory (AD 500–1493). This site has the potential to expand our understanding of the organization of Amerindian settlement in later prehistory, especially in comparison and contrast to the Valentine Ghaut site.

Site 12. Blake's Estate

A very well-preserved and large plantation complex. Along with the Carr Estate in Little Bay, this is one of the first plantation complexes on Montserrat. The major standing structure associated with the complex is currently being gutted for renovation and conversion into a commercial building. The remainder of the estate is substantial, with a windmill and at least one large, complex building. There is also a wide scatter of historical ceramics, both at the site and on the slope below it. This is a very significant site in terms of the study of Montserrat's plantation period, partly because of the impressive size of the complex, and the extent to which its ownership is documented by historical sources.

Site 13. Valentine Ghaut Battery

A battery of cannon situated on the bluff above the ghaut, probably from the 18th century, and paralleling the battery at Carr's Bay. The site is in imminent threat of falling into the sea, via erosion and wave action.

Site 14. Historical structure in Valentine Ghaut.

This site is composed of a roughly-made structure, possibly an animal pen, on the bluff above the ghaut. This is presumably associated with site 29, a probable farm or plantation complex a little further up the watercourse. These structures are part of a wider landscape of agricultural exploitation in the extreme north-west of the island, a landscape that was previously unknown. These structures, and extensive terracing, suggests an agricultural regime not hinted at by the current appearance of the landscape.

Site 15. Indian Creek site

This is the single largest prehistoric site on the island, and is of great significance. A dense carpet of ceramics, chipped stone tools, ochre, and other anthropogenic material (including zemis, Amerindian ritual objects) covers a large area. This evidence suggests a settlement of substantial size, utilizing off-island resources. Again, ceramic styles suggest that this site should be dated to between AD 500 and 1493. With the destruction of Trants, this is now the most important prehistoric site on Montserrat, and of great value for the study of later prehistory in the Leewards.

Site 16. Carr's Bay Battery

The 18th century cannon battery intended for the protection of Carr's Bay. This significant historical site is under imminent threat from coastal erosion, and from the corrosive nature of salty coastal air on iron.

Site 17. Isles Bay lime processing facility

This site is a well-preserved lime processing facility, and is very significant due to the dearth of surviving lime facilities in the north of the island. Artifacts found in association with the site span the 18th and 19th century, but the presence of a steam-powered boiler attached to one of the structures suggests that this facility was most active during the 19th century.

Site 18. The Cot

A 19th century residential complex, relatively well preserved.

Site 19. Duberry estate plantation

A plantation complex with standing remains, including mills. Another example of a well preserved mill complex from the Leeward side of the island.

Site 20. Air Studios

A modern site, Air Studios – the recording studio abandoned because of persistent volcanic activity – is nonetheless extremely interesting. Due to the nature of its semi-abandonment, much of the interior has been left intact, providing a snapshot of the island's material culture during the beginning of the volcanic crisis. Moreover, the interesting graffiti and pop memorabilia from Air are unique to the island, and the area.

Site 21. Fogarthy sugar mill ruins

The standing remains of a sugar-processing windmill on the Leeward side of the island.

Site 22. Brades estate ruins

The remains of the Brades estate plantation complex, with associated structures; a windmill, terraces, and sugar processing facilities.

Site 23. Windmill tower

A good example of an intact windmill tower on the Leeward side of the island.

Site 24. Barzey's windmill tower

This is another good example of a well-preserved windmill tower associated with sugar production.

Site 25. Plantation structures above Drummonds

The remains of terrace walls, probably buildings, and a large windmill. This previously undocumented site had no associated surface material, but can perhaps be associated with the known 18th–20th century activity in Drummonds.

Site 26. Baker Hill windmills

A series of two windmills positioned on the ridge on Bakers Hill, and other associated structures. The northernmost windmill has been partly incorporated into a modern house, while the southern windmill is well–preserved to a height of ca. 5m. Associated with these are terrace walls, supporting the terraces which provide the windmills' foundations, and scatters of historical artefacts dating to the 18th and 19th centuries.

Site 27. Lookout Pond site

This site is a waterhole, an artifact scatter, and associated horticulture below Rendezvous village. While still in use, the ceramics and other artefacts on the surface suggest that this area has been heavily used since at least the late 18th century, although small quantities of prehistoric materials were also found near the waterhole. These finds provide further evidence for landuse in the north of the island, probably associated with the population in Rendezvous.

Site 28. Structures in Valentine Ghaut

This site lies on a flat–topped ridge north of the ghaut, and the walls visible from the surface are mortared and faced, suggesting a domestic structure, rather than simply an ad hoc agricultural building. The high quality and wide variety of the ceramics found on the surface in a dense and localized scatter reinforces this interpretation. While not under immediate threat, this is a significant site for understanding the distribution of plantation period settlement in the northwest of the island.

Site 29. Underwood site.

A series of structures associated with the historical plantation here. Features include terrace walling and a structure of uncertain use. In addition, a bottle dump, and associated ceramic scatter, hint at the activities which took place on site. The morphology of the bottles date the dump to the late 19th early 20th centuries.

Site 30. Hospital site

In the midst of the yard of the St John's hospital there is a very dense scatter of prehistoric ceramics. Stylistically, these are very early in date; the presence of Zone Incised Crosshatched (ZIC) ware and White On Red (WOR) ware, both paralleled at Trants prior to its destruction, suggest a date between 500 BC and AD 500. This is extremely interesting, as, prior to this, Trants was assumed to be the only site of this date on the island, and one of the few of this date in the Leewards (alongside Hope Estate on St Martin). Limited test excavation suggested that these materials had not

originated from deposits in the hospital itself, but we may reasonably assume that were derived from nearby. This makes the hospital site very important for the study of Montserrat's earlier prehistory, and for the study of colonization dynamics in the Lesser Antilles.

Site 31. Historical site in Thatch Valley

This site is a cluster of structures of various type, including a probable animal pen, terraces, and a well-constructed building which may represent domestic quarters. The associated ceramics suggest a date range from the 17th to 19th centuries, including an isolated artefact scatter of material dating, at the latest, to the very early 18th century. This is very interesting, considering the only other site attested to have such an early date in the north of the island is at Little Bay. So far, it is also the only significant cluster of historical structures noted in this part of Thatch Valley.

Site 32. Plantations structures in Locust Valley

This site comprises three distinct structures, along with various related walling. The structures include a large, very-well preserved windmill tower, standing some 7m high. The keystone over the intact doorway has a date of construction, either 1773 or 1775. Aside from this, there is a large, well-preserved building to the south-west of the windmill, presumably associated with sugar production, and a small, one-room structure to the north-west, both preserved up to a maximum height of 6m. In addition to this there is a dried-out pond in this location. Finally, there appear to be petroglyphs, presumably prehistoric, on a rockface 20m to the west of the site.

Site 33. Virgin Island Road

This is a series of structures between Virgin Island and the coast. It is unclear as to the exact function of the structures, but the masonry is relatively coarse. Associated with the structures were a series of ceramic scatters, the date of which is largely 19th Century.

Site 34. Olveston House and Surroundings

Owned by Beatles producer Sir George Martin and renowned for its related music heritage, Olveston House is a contemporary heritage site. The house and gardens are attractive and the surroundings area also boasts the site of the original Olveston airstrip where Leewards Island Air Transport (LIAT) was founded.

Additional Sites for Further Investigation

The National Trust has also identified several additional sites in North Montserrat for further investigation. These will be considered alongside other sites in Montserrat in the compilation of the official Historical Site Record, once compiled. The National Trust should be consulted regarding any development proposals that impact on the below:

- St. John's Anglican Church
- St. Peter's Anglican Church
- St. James Anglican Church, Salem
- Salem Methodist Church
- Carr's Bay Cemetery
- Arrow root factory- Woodlands
- Stapple Town
- Hell's Gate
- The Walkingshaw Building in Salem
- Runaway Ghaut Site
- Olveston School , built for the children of workers on the Sturge's Plantation

APPENDIX F(2)

An Updated Record of Statutory Historic Sites

Items to be included in Terms of Reference for the Undertaking of an Historic Sites Survey for north Montserrat.

1. Identify the historic buildings and cultural heritage features of North Montserrat and record, by photography and measurement the salient features of such buildings;
2. Undertake an ethnographic survey using a combination of secondary data sources and interviews to document the social histories of each building;
3. Develop and adopt existing methodologies for the categorisation and grading of historic structures and buildings to the Montserrat context for approval by the Montserrat National Trust.
4. Individually assess and grade each site using the approved Methodology.
5. Prepare guidance notes for historic building repairs
6. Ensure that all work is undertaken in collaboration with the National Trust and ensure that the approach and methodology to this work can be replicated with existing on island resources and capacity.

APPENDIX G

List of Tourism Attractions

A list of the significant tourism attractions has been developed by the Montserrat Tourism Board (MTB). These are listed generally by category below and may be cross-referenced with Figure 6.3.

Nature, Environment and Recreation

1. All beaches and related facilities along west coast (Rendezvous, Little Bay, Carr's Bay, Bunkum Bay, Woodlands Bay, Lime Kiln Bay, Old Road Bay, Isles Bay, Foxes Bay)
2. Centre Hills protected forest
3. All hiking trails
4. Silver Hills area
5. Rendezvous Bay inland area
6. East coast bird watching viewpoints (particularly Lookout)
7. Little Bay and Salem Park cricket ground
8. Mount Pleasant Eco-lodge and forest above

Volcano related

9. Montserrat Volcano Observatory (MVO)
10. Belham Valley and volcanic deposits
11. Volcano Interpretation Centre
12. Isles Bay Plantation Viewpoint of Belham and Soufrière Hills Volcano
13. Garibaldi Hill - View of Plymouth and Soufrière Hills Volcano
14. Old Volcano Area in far north (Landscape views and crystal deposits)

Montserrat Island Life

15. National Museum
16. Salem Park sports and parade ground
17. Potential Marine Conservation Area
18. Character Areas (Cudjoe Head, Salem, St John's, St Peter's)
19. Carr's Bay and Little Bay area (once complete)

Heritage and Archaeology

20. Main heritage and archaeology points as identified in Appendix F(1) and Figure 2.3 and particularly the following:
21. Carr's Bay Gun Battery
22. Olveston House (music history and heritage)
23. Air Studios (music history and heritage)
24. Fogarthy Old Sugar Mill
25. Blakes Yard Old Ginnery and Plantation Building
26. Lookout Yard Old Sugar Mill
27. Cavala Hill Church and Ancient Site
28. St Peter's Church
29. Egret House (History and Architecture)
30. The Cot Old Plantation Ruins
31. Rocklands Ancient Tomb

Landscape

32. Blakes Estate viewpoints over the east coast and to Antigua
33. Jack Boy Hill view point over east coast, Trants and Soufrière Hills
34. Duckpond view point
35. Runaway Ghaut (Spring site and trail)
36. Airport Gallery View Point
37. Waterworks Estate (landscape and history)
38. Bottomless Ghaut coastal viewpoint and potential picnic area

APPENDIX H

The Strategic Environmental Assessment (SEA) Process

Building Sustainability into the PDP: A Strategic Environmental Assessment

The Sustainable Development Plan for Montserrat 2008-2020 defines the following vision for 2020: “Montserrat’s natural resources conserved within a system of environmental sustainable development and appropriate strategies for disaster mitigation”. To ensure that the Physical Development Plan is wholly consistent with this vision a Strategic Environmental Assessment (SEA) has been built into the planning process.

What is an SEA?

There are many definitions that can be applied to an SEA. One of the most widely adopted is that contained in the OECD/DAC Guidelines for applying SEA³. This defines an SEA as:

“A range of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programmes and evaluate the inter linkages with economic and social considerations”

This is a necessarily broad definition; the purpose of SEA is to influence a policy or plan at the formative stage and increase the likelihood of sustainable development outcomes and reduced environmental risk. The SEA is most effective when carried out as an integral part of the plan development, not retrospectively or as a token bolt-on to the process.

Approach adopted to the SEA

This SEA has been fully integrated into the PDP development process. Work commenced on the SEA on the same day as work commenced on other aspects of the PDP. Emerging issues and ideas from the SEA have been woven into the land and infrastructure planning process and vice versa. Many SEA processes have been common to the PDP. Shared consultation processes and iterative drafting of both the PDP and the SEA have ensured that this SEA is truly embedded in the PDP document.

³ OECD (2006): Applying Strategic Environmental Assessment: Good Practice Guidance for Development Co-operation

The SEA has involved an iterative process of collecting information, defining alternatives, identifying environmental effects, developing mitigation measures and revising proposals in the light of predicted environmental effects. The relationship between the PDP and the stages of the SEA process are illustrated in Figure I1.

The SEA has then assessed the overall sustainability of the PDP using a set of SEA objectives. These have been derived from national and international policy commitments and refined in light of existing environmental conditions. These objectives are presented in Figure I2.

A full assessment was undertaken towards the end of 2011 as part of the final public consultation exercise. **December 2011** marked the end point where further iterations are unlikely to bring further significant improvements in predicting the environmental effects of the PDP.

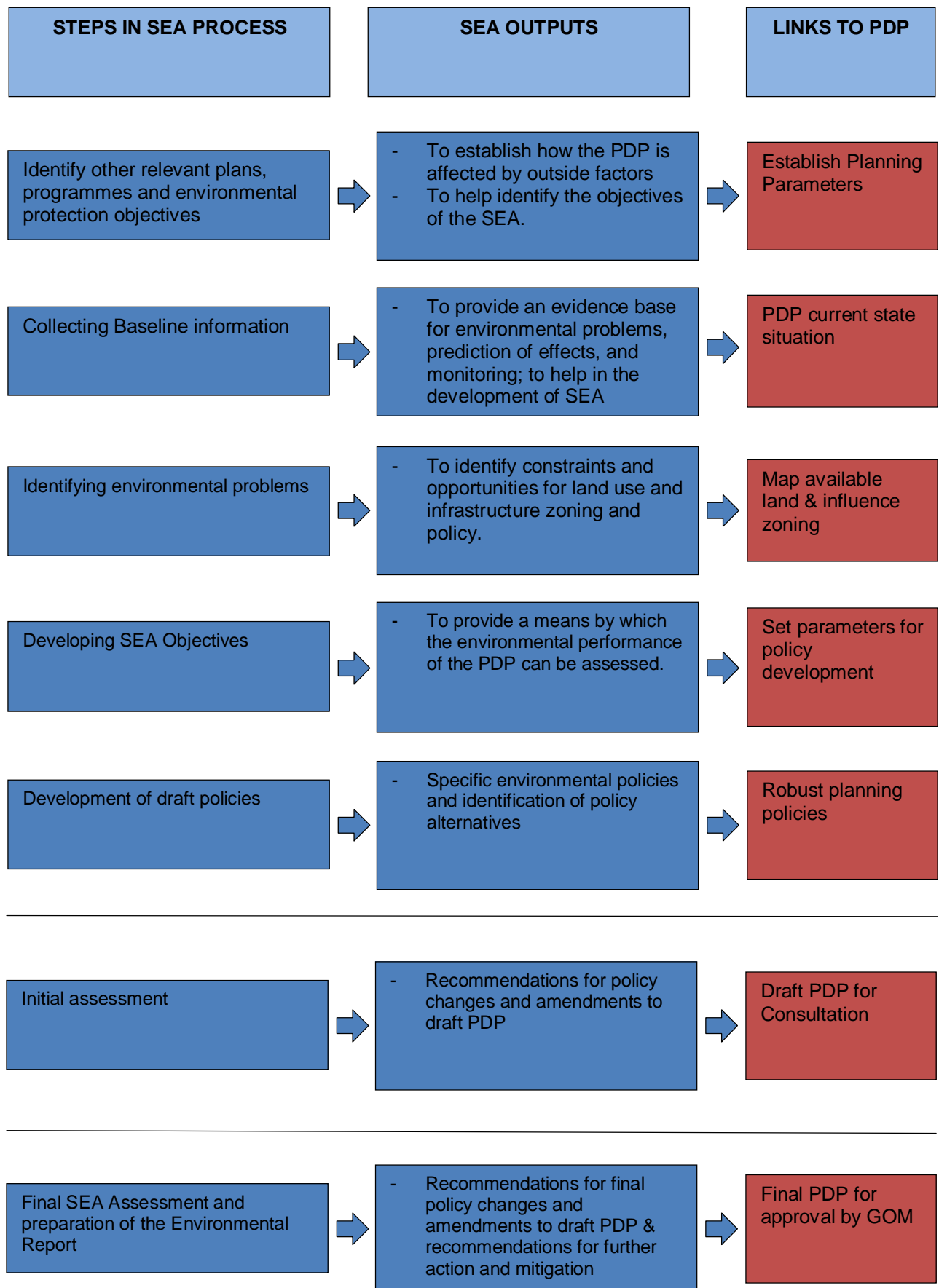


Figure H1: Relationship between the PDP and the SEA

Table H1: SEA Assessment Objectives

SEA Topic	SEA Objectives
Bio-diversity, flora and fauna (terrestrial and marine)	<p>B1 avoid damage to designated protected areas and protected species</p> <p>B2 maintain biodiversity, avoiding irreversible losses</p> <p>B3 reverse the decline (and see growth) in the populations of endangered/protected species such as the mountain chicken in line with SDP targets</p> <p>B4 restore the full range of characteristic habitats and species to viable levels</p> <p>B5 ensure the sustainable management of key bio-diversity hotspots and the ecological processes on which they depend (including marine)</p> <p>B6 provide opportunities for people to come into contact with and appreciate Montserrat's wildlife and wild places</p> <p>B7 reduce effects of invasive species, including feral and loose livestock</p>
Water and Soils	<p>B8 maintain water abstraction, run-off and recharge within carrying capacity (including future capacity)</p> <p>B9 minimise potential for contamination of protected water catchments and springs, and safeguard soil quality and quantity (including effective management of ghauts)</p> <p>B10 identify and protect potential ground water sources;</p> <p>B11 minimize waste, then re-use or recover it through recycling, composting or energy recovery</p> <p>B12 minimise risks of contamination through inappropriate disposal of hazardous waste</p> <p>B13 minimise potential for contamination through inappropriate location and management of wastewater and wastewater treatment facilities</p>
Cultural Heritage and Landscape	<p>CH1 Facilitate conservation of historical sites, artefacts and cultural heritage</p> <p>CH2 Value and protect diversity and local distinctiveness</p> <p>CH3 protect and enhance the landscape everywhere and particularly in protected/designated areas</p>
Air	<p>A1 limit air pollution to levels that do not damage natural systems</p> <p>A2 reduce the need to travel</p> <p>A3 reduce potential for respiratory illnesses</p>
Noise	N1 minimise noise disturbance and maximise compliance with national noise standards
Climate Factors	
Mitigation	<p>Minimise future climate change, for example by:</p> <p>C1 Reducing the need for energy</p> <p>C2 Increasing % of renewable energy</p> <p>C3 Switching to low carbon fuels</p> <p>C4 Maintaining and enhancing carbon sequestration by natural carbon sinks and reducing the loss of carbon – especially from soils</p>

SEA Topic	SEA Objectives
Adaptation	<p>Reduce vulnerability to the impacts of climate change. For example by:</p> <p>CA1 Providing adequate health services and infrastructure</p> <p>CA2 Ensuring drainage systems (including culverts etc) can cope with changes in rainfall intensity</p> <p>CA3 Taking a precautionary and risk based approach to flood risk (inland and coastal)</p> <p>CA4 Taking a precautionary and risk based approach to wind/seismic/geological risk</p> <p>CA5 Ensuring adequate future water supply and demand management</p> <p>CA6 Provide robust transport related infrastructure</p> <p>CA7 Increase green space in urban areas</p> <p>CA8 Develop ecological resilient and varied landscapes</p>
Other Disaster Risk	<p>DR1 Minimise the impact of natural and manmade hazards</p>
Population and Human Health	<p>PH1 create conditions to encourage desired levels of population growth</p> <p>PH2 implement initiatives which will encourage residents to remain in Montserrat and to challenge the diaspora to continue to contribute to the island's development</p> <p>PH3 create conditions to improve health and reduce health inequalities</p> <p>PH4 promote healthy living</p> <p>PH5 protect and enhance human health</p> <p>PH6 decrease noise and vibration</p> <p>PH7 increase opportunities for recreation and exercise</p> <p>PH8 create conditions that balance competing/complementary livelihoods – eg. the needs of fisherman vis the needs of divers and tourism industry or agriculture vis housing</p>

APPENDIX I

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