2016

ENVIRONMENTAL STATISTICS COMPENDIUM

GOVERNMENT OF BERMUDA
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Research Division
P.O. Box HM 3015
Hamilton, HM MX, Bermuda

Telephone: (441) 297-7761
Fax: (441) 295-8390

E-mail: statistics@gov.bm
Website: www.gov.bm

CONTENTS

FOREWORD

The Department of Statistics is pleased to release its seventh issue of the *"Environmental Statistics Compendium"*. In alignment with the Department's mission to collect, process and analyze relevant statistical information; this publication reflects the collation of existing data sourced from stakeholders and awareness about issues affecting Bermuda's environment.

Additionally, the delivery of this report supports the combined efforts of the United Nations Statistics Division and the Caribbean Community to strengthen capacity and harmonize the compilation of social, gender and environmental statistics and indicators.

The Environmental Statistics Compendium is structured into thirteen (13) sections which include:

1. Population and Housing
2. Tourism
3. Environmental Health and Weather
4. Natural and Environmental Disasters
5. Energy, Minerals and Transport
6. Agriculture
7. Land Use
8. Coastal and Marine Resources
9. Biodiversity
10. Forestry
11. Air
12. Waste
13. Water

The figures in the Environmental Statistics Compendium are mainly totals for calendar months for the period 2011 to 2015.

The Department acknowledges the continued support of all subject-area experts and stakeholders who committed to providing the statistical data and information needed to compile and publish this report.

Melinda Williams
Director
Department of Statistics

May 2017

EXPLANATORY NOTES

-	Not applicable	km^2	Square kilometer
..	Not available	kWh	Kilowatt-hour
r	Revised data	mio m^3/y	Million cubic meters per year
—	Nil or negligible	mT	Metric tonnes
'000	Thousands	No.	Number
°	Degrees	$\mu g/m^3$	Microgram
%	Percent	NO_2	Nitrogen Dioxide
$	Bermuda dollar	SO_2	Sulfur Dioxide
F	Fahrenheit	ppb	Parts per billion
ha	Hectare	TSP	Total Suspended Particles
kg	Kilograms	$PM_{10}/PM_{2.5}$	Fine Particulate Matter
km	Kilometer	mg/nm^3	Milligrams per cubic meter
//	Axis scale has a discontinuity	MDG	Millennium Development Goal
		NTR	Note to Reader

*Percentages may not sum to totals due to rounding

MEASURING UNITS CONVERSION TABLE

METRIC		IMPERIAL	IMPERIAL		METRIC
LENGTH					
1 millimetre (mm)		0.03937 inch (in)	1 inch (in)		2.54 centimetre (cm)
1 centimetre (cm)	10 mm	0.3937 inch	1 yard (yd)	3 feet (ft)	0.9144 metre (m)
1 metre (m)	100 cm	1.0936 yards (yds)	1 mile	1,760 yds	1.6093 kilometre (km)
1 kilometre (km)	1,000 m	0.6214 mile			
AREA					
1 square meter (m^2)	10,000 cm^2		1 acre	4,840 yd^2	4,046.9 square meter (m^2)
1 hectare (ha)	10,000 m^2	2.4712 acres	1 acre		0.4047 hectare (ha)
1 square kilometer (km^2)	100 ha	0.3861 square mile ($mile^2$)	1 square mile ($mile^2$)	640 acres	2.59 square kilometer(km^2)
MASS					
1 kilogram (kg)	1,000 grams (g)	2.2046 pounds (lbs)	1 pound (lb)	16 ounces (oz)	0.4536 kg
1 metric tonne (mT)	1,000 kg	0.9842 ton	1 ton	2,240 lbs	1.016 metric tonne (mT)
TEMPERATURE					
1 degree Celsius (°C)		33.8 degrees Fahrenheit (°F)	1 degree Fahrenheit (°F)		17.2 degree Celsius (°C)
			33.8 degrees Fahrenheit (°F)		1 degree Celsius (°C)

CONTRIBUTORS

Bermuda Electric Light Company (BELCO) Ltd.

Bermuda Fire and Rescue Service

Bermuda Hospital Board

Bermuda Tourism Authority

Department of Conservation Services

Department of Environmental Protection

Department of Health

Department of Planning

Department of Statistics

Department of Tourism

Department of Works and Engineering - Waste and Enforcement Section

The Bermuda Weather Service

Transport Control Department

SECTION 1

POPULATION AND HOUSING

The Population and Housing Section contains information on the number of persons in Bermuda and the type of households they occupied.

Population

• In 2015, the population of Bermuda was projected to be 61,735 persons, a 0.07 percent decrease from the 61,777 persons projected in 2014 (Table 1.1).

• From 2014 to 2015, there was a projected decrease of one (1) person per square kilometer (Table 1.1 and Chart 1.1).

Households

• During the period 2000 to 2010, there was a 7.06% increase in the total number of households (Table 1.2).

• Just over one-third (34.36%) of households were two apartment dwellings in 2010 (Table 1.2).

• Home ownership grew 4.20 percentage points over the ten-year period 2000 - 2010 to 47.40% (Table 1.3).

• In 2010, households with two bedrooms accounted for over one-third (8,944) of households in Bermuda (Table 1.4).

• The average number of persons per bedroom was 1.13 persons in 2010 (Table 1.4).

• In 2010, 31.49% of the total households in Bermuda were two person households (Table 1.5).

• The average size of a household dropped from 2.47 persons in 2000 to 2.42 persons in 2010 (Table 1.5).

Table 1.1

Population and Population Density, 2011 - 2015

Year	Population	Population Density (per km^2)
2011	63,193 [1]	1,163
2012	62,408 [1]	1,148
2013	61,954 [1]	1,140
2014	61,777 [1]	1,137
2015	61,735 [1]	1,136

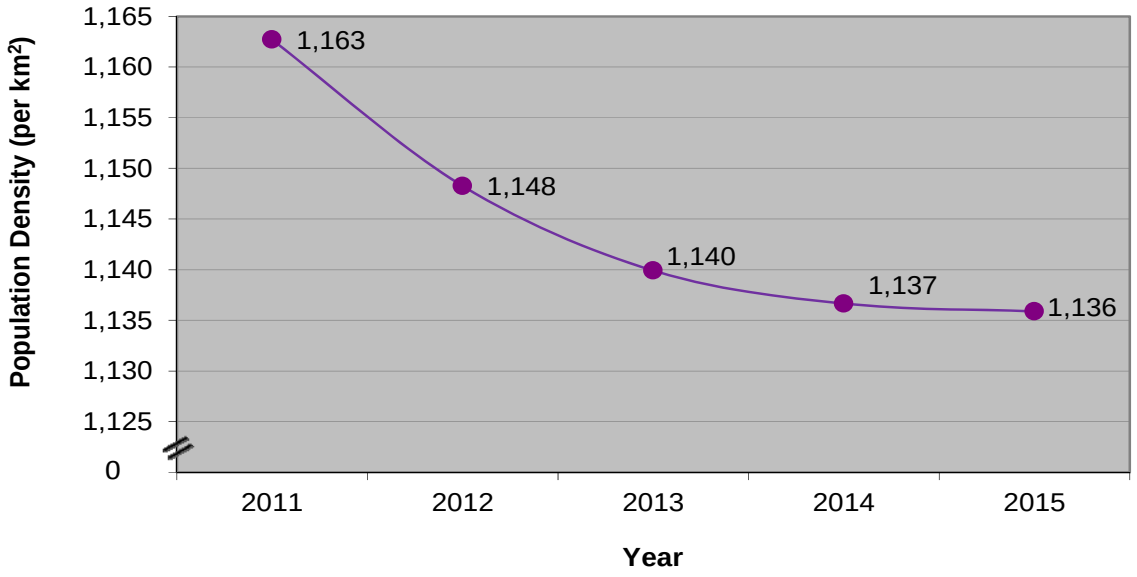
Source: Department of Statistics

According to the Department of Planning (2008), Bermuda is 54.35km^2.

[1] Based on the Bermuda Population Projections 2010-2020.

Chart 1.1

Population Density, 2011 - 2015



Source: Department of Statistics

Table 1.2

Number of Households by Type of Dwelling, 2000 and 2010

Type of Dwelling	2000 No.	2000 %	2010 No.	2010 %
Undivided private house (cottage)	6,717	26.71	6,280	24.33
Two apartments	8,679	34.51	8,870	34.36
Three apartments	4,396	17.48	4,639	17.97
Four or more apartments	4,580	18.21	5,024	19.46
Residential/commercial premises	306	1.22	281	1.09
Group dwellings[1]	385	1.53	696	2.71
Other/not stated	85	0.34	27	0.10
Total	**25,148**	**100.00**	**26,923** [2]	**100.00** [3]

Source: 2000 and 2010 Census of Population and Housing

[1] Group dwellings include hotel staff quarters, nurses' hostels, and police barracks.

[2] Includes 1,106 households for which there is no data by type of dwelling.

[3] The denominator for percentage distribution is 25,817 (26,923 - 1,106).

Table 1.3

Number of Households by Type of Tenure, 2000 and 2010

Type of Tenure	2000 No.	2000 %	2010 No.	2010 %
Own	10,863	43.20	12,238	47.40
Rent	12,854	51.11	11,719	45.39
Rent-Free	1,006	4.00	1,004	3.89
Other/Not Stated	425 [1]	1.69	856 [2]	3.32
Total	**25,148**	**100.00**	**26,923** [3]	**100.00** [4]

Source: 2000 and 2010 Census of Population and Housing

[1] Includes 385 group dwellings.

[2] Includes 696 group dwellings and 27 boats.

[3] Includes 1,106 households for which there is no data by type of tenure.

[4] The denominator for percentage distribution is 25,817 (26,923 - 1,106).

Table 1.4

Number of Households by Number of Bedrooms, 2000 and 2010

Number of Bedrooms	2000		2010	
	No.	%	No.	%
Studio dwelling (zero bedrooms)	1,188	4.79	790	3.15
Households with one bedroom	6,385	25.78	6,101	24.31
Households with two bedrooms	8,964	36.20	8,944	35.64
Households with three bedrooms	6,866	27.73	7,473	29.78
Households with more than three bedrooms	1,319	5.33	1,645	6.56
Not stated	41	0.17	141	0.56
Total number of households	**24,763**	**100.00**	**26,923** [1]	**100.00** [2]
Average number of bedrooms per household	**2.03**		**2.15**[3]	
Average size of the household	**2.47**		**2.42**[4]	
Average number of persons per bedroom	**1.23**		**1.13**[5]	

Source: 2000 and 2010 Census of Population and Housing

[1] Includes 696 group dwellings, 27 boats and 1,106 households for which there is no data by type of dwelling.

[2] The denominator for percentage distribution is 25,094 (26,923 - 696, 27 and 1,106).

[3] Excludes 696 group dwellings and 27 boats, since the number of bedrooms is not collected for these types of dwellings, 141 households which were 'Not Stated' and 1,106 households for which there is no data on the number of bedrooms. The calculation is 53,544 bedrooms ÷ 24,953 households).

[4] In calculating the average size of household, the population of 875 persons from the group dwellings and boats, the population of 308 persons from the 'Not Stated' households and the population of 2,551 from the 1,106 households for which there is no data by type of dwelling, was subtracted from the total population. The calculation is 60,503 persons ÷ 24,953 households.

[5] In calculating the average number of persons per bedroom, the population of 875 persons from the group dwellings and boats, the population of 308 persons from the 'Not Stated' households and the population of 2,551 from the 1,106 households for which there is no data by type of dwelling, was subtracted from the total population. The calculation is 60,503 persons ÷ 53,544 bedrooms.

Table 1.5

Number of Households by Size of Household, 2000 and 2010

	2000		2010	
Size of Household	**No.**	**%**	**No.**	**%**
One person	7,358	29.26	7,341	29.25
Two persons	7,539	29.98	7,902	31.49
Three persons	4,489	17.85	4,498	17.92
Four persons	3,683	14.65	3,536	14.09
Five persons	1,436	5.71	1,234	4.92
Six persons	408	1.62	385	1.53
Seven persons	151	0.60	112	0.45
Eight persons	47	0.19	52	0.21
More than eight persons	37	0.15	34	0.14
Total number of households	**25,148**	**100.00**	**26,923** [1]	**100.00** [2]
Average size of household	**2.47**		**2.42** [3]	

Source: 2000 and 2010 Census of Population and Housing

[1] Includes 696 group dwellings, 27 boats and 1,106 households for which there is no data by size of households.

[2] The denominator for percentage distribution is 25,094 (26,923 - 696, 27 and 1,106).

[3] In calculating the average size of household, the population of 875 persons from the group dwellings and boats, the population of 308 persons from the 'Not Stated' households and the population of 2,551 from the 1,106 households for which there is no data by type of dwelling, was subtracted from the total population. The calculation is 60,503 persons ÷ 24,953 households.

Millennium Development Goal 7
Indicator 32
Proportion of households with access to secure tenure
100%

The percentage of the population that do not live in slums. A slum household is a group of individuals living under the same roof who lack one or more of the following conditions: security of tenure, structural quality and durability of dwellings, access to safe water, access to sanitation facilities and sufficient living area.

Secure tenure refers to households that own or are purchasing their homes, renting privately or are in social housing or sub-tenancy. Households without secure tenure are defined as squatters (whether or not they pay rent), homeless and households with no formal agreement.

SECTION 2

TOURISM

Bermuda's tourism industry is the largest source of revenue to the economy after international business.

Visitor Arrivals

• The total number of visitors to Bermuda in 2015 decreased by 3.97 percent from 580,260 in 2014 to 557,210 in 2015 (Table 2.1).

• Cruise ship arrivals increased 4.76 percent from 2014 to 2015 (Table 2.1).

• In 2015, the average length of stay for air passengers increased to 6.30 days (Table 2.1).

Visitor Expenditure

• Visitor expenditure peaked at $437 million in 2011; however, it dropped to a five-year low of $333 million in 2015 (Table 2.2).

• In 2015, there were 4,012 persons directly employed in the tourism industry. Males accounted for 2,396 persons compared to 1,616 females (Table 2.2).

Tourist Properties

• The total number of tourist properties in Bermuda decreased from 45 in 2014 to 43 in 2015 (Table 2.3).

• The total number of rooms available decreased by 1.78% from 2,415 in 2014 to 2,372 in 2015 (Table 2.3).

• There was a decline of 1.67% in the total number of beds from 5,018 in 2014 to 4,934 in 2015 (Table 2.3).

• The occupancy rate decreased 5.50 percentage points from 58.00% in 2014 to 52.50% in 2015 (Table 2.3).

• The number of rooms per km^2 dropped to a five-year low of 43.65 in 2015 (Table 2.3).

Section 2/Cont'd.

Air Passengers

• In 2015, two-thirds (69.23%) of all air passengers stayed at hotel properties (Table 2.4).

• Air passenger arrivals decreased from 224,380 in 2014 to 219,814 in 2015. Year over year, air passengers originating from the United Kingdom and other countries saw increases of 1.49% and 11.01%, respectively. (Table 2.5).

• Air passengers consumed an estimated 4,834 kWh in 2015, 0.58 percent more electricity consumed than the 4,806 kWh in 2014 (Table 2.6).

NOTE TO READER

Average Length of Stay: intended length of stay or number of nights spent, unless otherwise stated.

Estimated Electricity Consumption by Tourists: a more direct tourism pressure indicator. It is estimated as the national daily per capita electricity consumption times the number of tourist arrivals by the average length of stay, per 1 million population.

Index of Social Pressure or Ratio of Tourists (or Visitors) to the Local Population: measures the number of tourists (or visitors) to one resident of the country at any given point in time.

Number of Hotel Rooms per km^2: commonly accessible indirect proxy to measure tourism's imprint on the physical environment. It is the number of hotel rooms available divided by the total land area (54.35 km^2).

Occupancy Rate: is calculated by dividing the monthly or yearly sum of room nights utilized by the number of room nights available for use, then multiplying the quotient by 100 to express as a percentage.

Tourism: the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes.

Tourist: a person traveling to and staying in places outside his or her usual environment for not more than one consecutive year but who stays for more than 24 hours in a destination for leisure, business and other purposes.

Air Passenger Arrivals: all stay-over visitors, excluding cruise passenger arrivals, given most cruise ships stop at multiple destinations, the total number of arrivals at all destinations is considerably larger than the number of cruise passengers visiting the region.

Tourism Expenditure: the total expenditure made by a visitor or on behalf of a visitor for and during his/her stay at a destination.

Tourism Intensity/Density Ratio: measures the average daily tourist density per km^2. It is the number of tourists per unit of land area at any given point in time. That is, number of tourists times average stay divided by land area (54.35 km^2) times 365. It shows how tourists are spread on the territory on average, and gives a general indication of pressures on land use due to tourism, with regard to a reference period (e.g. year) or in peak season.

Tourism Penetration Ratio: measures the average daily tourist density per 1,000 population. It is the number of tourists per 1,000 inhabitants of the country at any given point in time. That is, the number of tourists multiplied by the average length of stay divided by the population times 365.

Visitor: any person traveling to a place other than his/her usual environment for less than twelve months and whose main purpose of visit is other than the exercise of an activity remunerated from within the place visited.

Source: CARICOM Environment Program

Table 2.1
Air Passenger Arrivals, Cruise Ship Arrivals, Average Length of Stay, Tourism Intensity and Penetration Ratio, 2011 - 2015

Indicator	2011	2012	2013	2014	2015
Total visitors[1]	**651,749**	**610,325**	**576,373**	**580,260**	**557,210**
Percentage change (%)	+12.33	-6.36	-5.56	+0.67	-3.97
Air passengers	236,038	232,063	236,343	224,380	219,814
Percentage change (%)	+1.63	-1.68	+1.84	-5.06	-2.03
Tourist arrival index	60.44	59.43	60.52	57.46	56.29
Cruise ship passengers	415,711	378,262	340,030	355,880	337,396
Percentage change (%)	+19.48	-9.01	-10.11	+4.66	-5.19
Cruise ship arrivals	177	157	125	126	132
Percentage change (%)	+18.79	-11.30	-20.38	+0.80	+4.76
Average length of stay of air passengers	**6.06** [2]	**5.40** [3]	**5.30** [3]	**6.28** [3]	**6.30** [3]
Population [4]	**63,193**	**62,408**	**61,954**	**61,777**	**61,735**
Air passengers to residents ratio	**3.74**	**3.72**	**3.81**	**3.63**	**3.56**
Cruise ship passengers to residents ratio	**6.58**	**6.06**	**5.49**	**5.76**	**5.47**
Visitors to residents ratio	**10.31**	**9.78**	**9.30**	**9.39**	**9.03**
Tourism intensity ratio	**72.10**	**63.17**	**63.14**	**71.03**	**69.81**
Tourism penetration ratio	**62.01**	**55.01**	**55.39**	**62.49**	**61.46**

Sources: Department of Tourism, Bermuda Tourism Authority, and Bermuda Population Projections 2010 - 2020

[1] Does not include yacht passengers

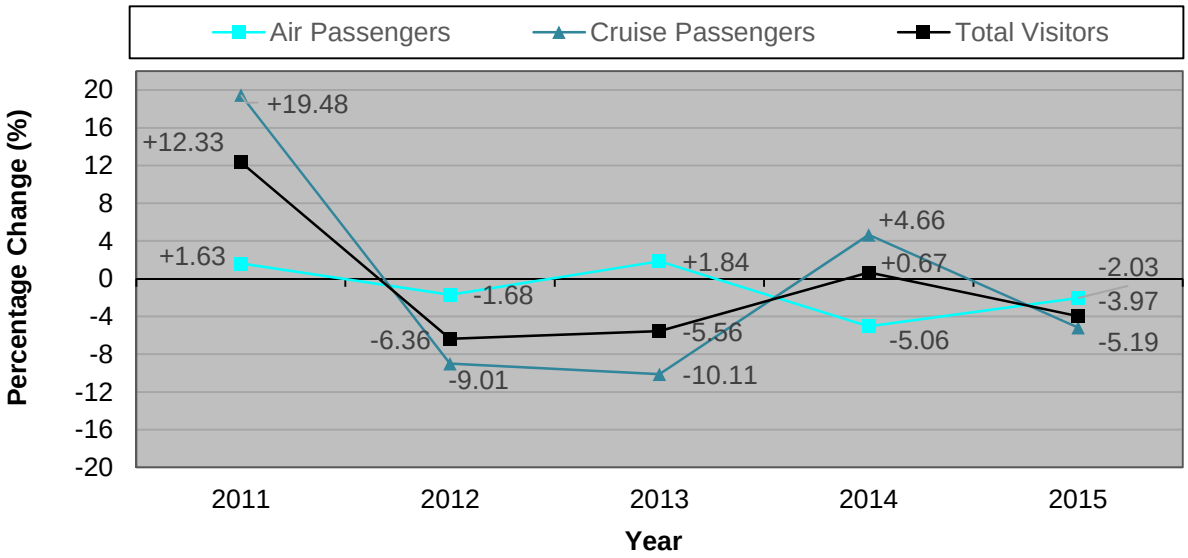
[2] Department of Tourism

[3] Bermuda Tourism Authority

[4] Bermuda Population Projections 2010-2020

Chart 2.1

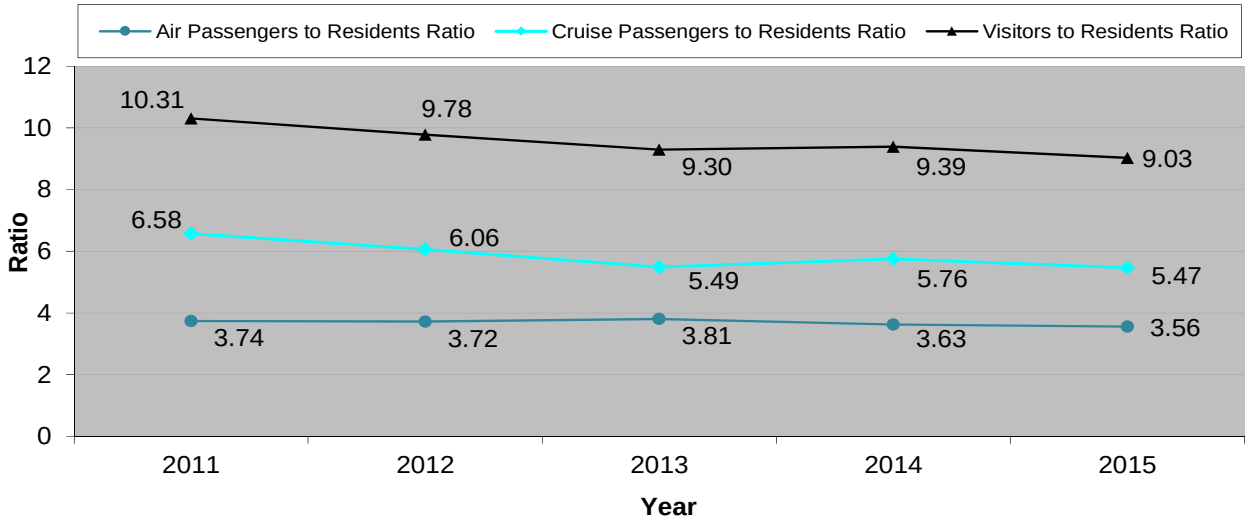
Growth in Air Passengers, Cruise Passengers and Total Visitors, 2011 - 2015



Sources: Department of Tourism and Bermuda Tourism Authority

Chart 2.2

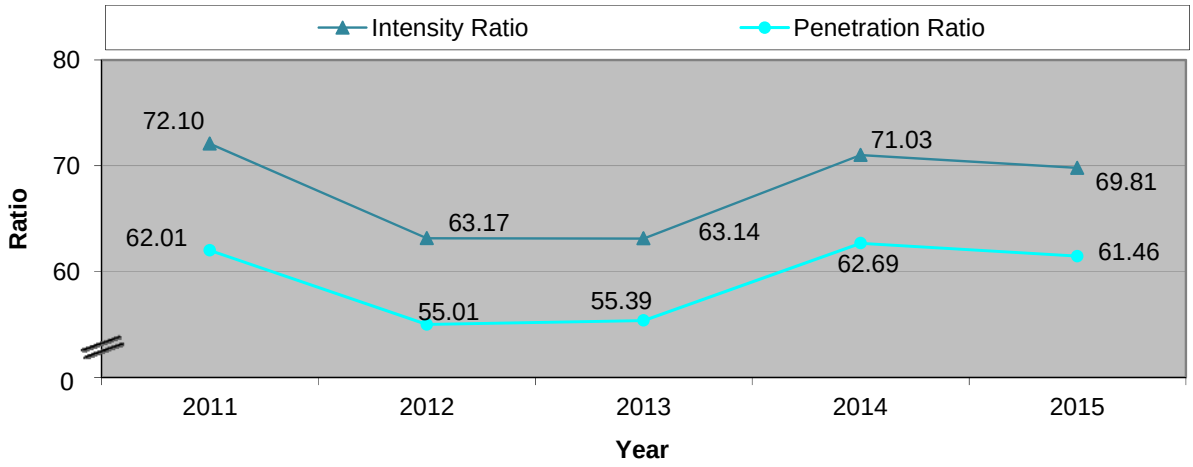
Air Passengers to Residents, Cruise Passengers to Residents and Visitors to Residents Ratios, 2011 - 2015



Sources: Department of Tourism, Bermuda Tourism Authority, and Housing and Bermuda Population Projections 2010 - 2020

Chart 2.3

Tourism Intensity and Penetration Ratios, 2011 - 2015



Sources: Department of Tourism, Bermuda Tourism Authority and Bermuda Population Projections 2010 - 2020

Table 2.2

Visitor Expenditure and Number Employed in Tourism, 2011 - 2015

Item		2011 [1]	2012 [2]	2013 [2]	2014 [2]	2015 [2]
Visitor expenditure (in US$'000)		**437,400**	**394,400**	**393,600**	**347,900**	**333,000**
Expenditure on same-day visits		86,400	80,100	72,800	72,700	62,100
Expenditure on accommodation, meals and drinks, shopping, entertainment etc.		351,000	314,300	320,800	275,200	270,900
Total directly employed in tourism [3]						
	Women	1,872	1,823	1,723	1,635	1,616
	Men	2,661	2,562	2,494	2,485	2,396
	Total	**4,533**	**4,385**	**4,217**	**4,120**	**4,012**

[1] Source: Department of Tourism

[2] Source: Bermuda Tourism Authority

[3] Source: Department of Statistics

Table 2.3

Number of Tourist Properties, Occupancy Rate and Number of Rooms per km^2, 2011 - 2015

Item	2011 [1]	2012 [2]	2013 [2]	2014 [2]	2015 [2]
Number of properties	48	48	47	45	43
Total number of rooms available	2,533	2,532	2,538	2,415	2,372
Total number of beds	5,244	5,256	5,264	5,018	4,934
Total number of room nights sold [1]	355,145	350,356	342,767	330,393	.. [4]
Occupancy rate (%)[3]	**56.30**	**55.70**	**57.00**	**58.00**	**52.50**
Number of rooms per km^2	**47.68**	**46.58**	**46.71**	**44.44**	**43.65**

[1] Source: Department of Tourism

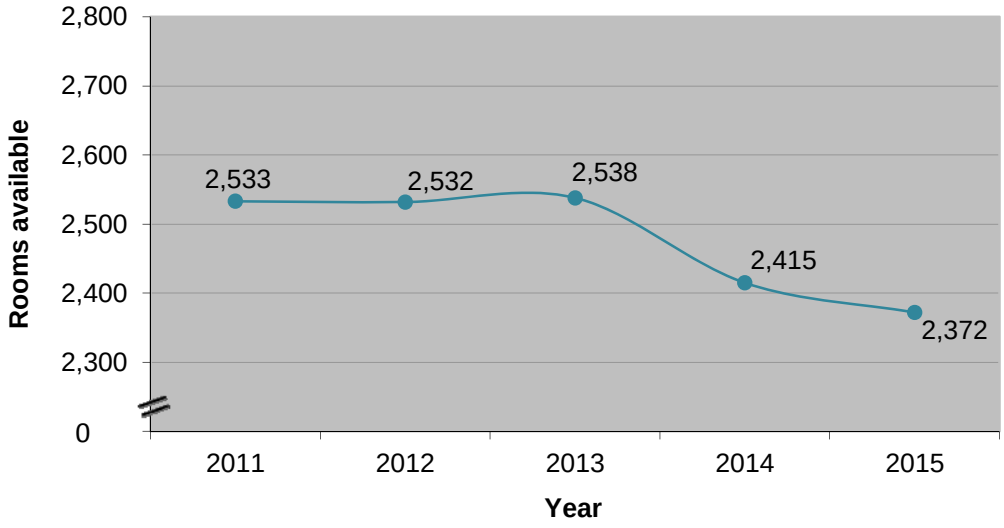
[2] Source: Bermuda Tourism Authority

[3] Occupancy rate is only reported by the Bermuda Hotel Association which accounts for approximately 50% of the total properties and 80% of the total number of rooms and beds available. This figure is sourced from the Visitor Profile Report produced by the Department of Tourism and Bermuda Tourism Authority.

[4] This data will no longer be provided.

Chart 2.4

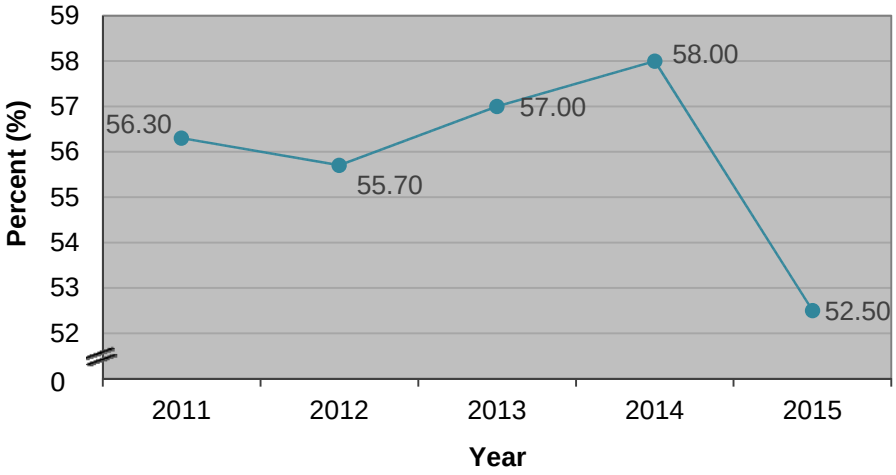
Number of Hotel Rooms Available, 2011 - 2015



Sources: Department of Tourism and Bermuda Tourism Authority

Chart 2.5

Occupancy Rate, 2011 - 2015



Sources: Department of Tourism and Bermuda Tourism Authority

Table 2.4

Air Passenger Arrivals by Type of Accommodation, 2011 - 2015

Type of Accommodation	2011 [1]	2012 [2]	2013 [2]	2014 [2]	2015 [2]
Hotels	168,502	166,425	167,538	153,758	152,176
Guest Houses	1,996	1,548	1,683	7,023 [3]	5,575 [3]
Other	65,540	64,090	67,122	63,599	62,063
Total	**236,038**	**232,063**	**236,343**	**224,380**	**219,814**

[1] Source: Department of Tourism

[2] Source: Bermuda Tourism Authority

[3] Includes Bed and Breakfast and Housekeeping accommodations.

Table 2.5

Air Passenger Arrivals by Country of Origin, 2011 - 2015

Country of Origin	2011 [1]	2012 [2]	2013 [2]	2014 [2]	2015 [2]
United States	172,890	168,178	171,215	159,382	157,158
Canada	29,217	30,565	27,613	29,162	24,986
United Kingdom	21,524	21,029	23,610	22,179	22,509
Other	12,407	12,291	13,905	13,657	15,161
Total	**236,038**	**232,063**	**236,343**	**224,380**	**219,814**

[1] Source: Department of Tourism

[2] Source: Bermuda Tourism Authority

Table 2.6

Estimated Electricity Consumption by Air Passengers, 2011 - 2015

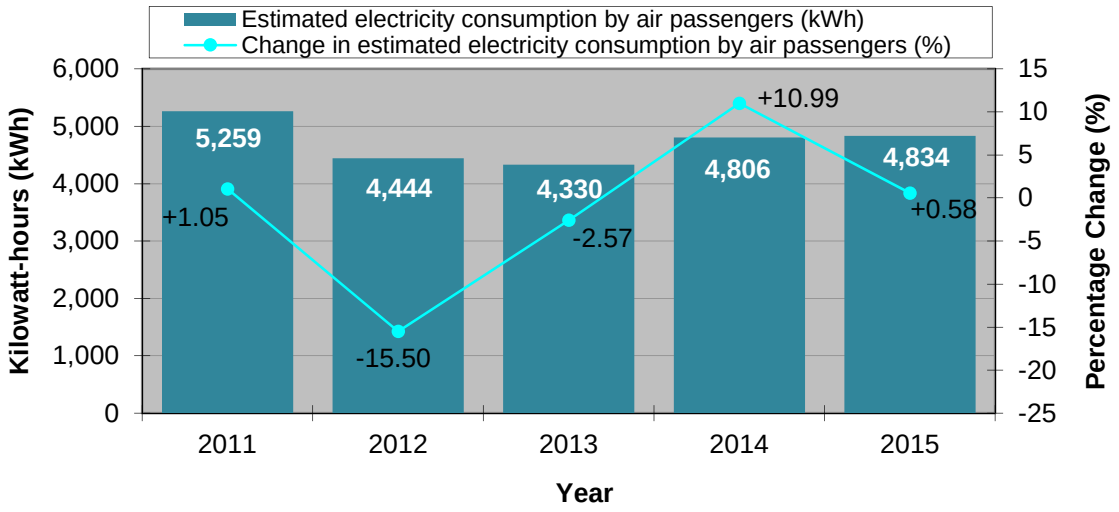
Type of Accommodation	2011	2012	2013	2014	2015
Air Passengers	236,038	232,063	236,343	224,380	219,814
Average length of stay	6.06 [1]	5.40 [2]	5.30 [2]	6.28 [2]	6.30 [2]
Electricity consumption (kWh)	636,517	606,346 [r]	586,704 [r]	577,365	590,427
Daily per capita electricity consumption (kWh)	3,676 [r]	3,546 [r]	3,457 [r]	3,411	3,491
Estimated electricity consumption by air passengers (kWh)	**5,259** [r]	**4,444** [r]	**4,330** [r]	**4,806**	**4,834**
Change in estimated electricity consumption by air passengers (%)	**+1.05** [r]	**-15.50** [r]	**-2.57** [r]	**+10.99** [r]	**+0.58**

[1] Source: Department of Tourism

[2] Source: Bermuda Tourism Authority

Chart 2.6

Estimated Electricity Consumption by Air Passengers and Growth, 2011 - 2015



Sources: Department of Tourism and Bermuda Tourism Authority

SECTION 3

ENVIRONMENTAL HEALTH AND WEATHER

The Environmental Health and Weather Section contains information concerning environmentally-related diseases as well as weather data for Bermuda.

Environmental Health

• In 2015, there were 5,806 reported cases of environmentally-related diseases in Bermuda. This represented a 1.91% increase from the 5,697 reported cases in 2014 (Table 3.1).

• Respiratory diseases accounted for 5,360 of the total reported cases in 2015 (92.32%) (Table 3.1).

• In 2015, females accounted for the largest proportion (53.75%) of environmentally-related diseases (Table 3.1).

Weather

• Total rainfall in Bermuda decreased by 16.82% over the period 2014 to 2015 (Table 3.2).

• In 2015, the months with the most rain days (20) were July and October while the least (8) was recorded in May and June (Table 3.2).

• August had the highest mean air temperatures during 2015 with an average daily air temperature of 81.70°F. The lowest mean air temperature during 2015 was recorded in February (63.40°F) (Table 3.3).

• Over the five-year period, 2011 to 2015, the average daily air temperature reported was 72.20°F. The average maximum daily air temperature was 76.06°F while the average daily minimum air temperature was 68.08°F for the same period (Table 3.3).

• In 2015, June had the highest humidity (79.20%), while the lowest was recorded in March (69.60%). The average relative humidity for the five-year period, 2011 to 2015, was recorded at 74.10% (Table 3.4).

Table 3.1

Reported Cases of Environmentally-Related Diseases by Sex, 2011 - 2015

Cause	Sex	2011	2012	2013	2014	2015
Gastroenteritis [1]	Female	121	88	89	97	114
	Male	110	98	73	67	98
	Total	231	186	162	164	212
Malaria (imported)	Female	1	—	—	1	—
	Male	2	—	1	1	2
	Total	3	—	1	2	2
Dengue (imported)	Female	1	—	—	—	—
	Male	—	—	—	—	2
	Total	1	—	—	—	2
Accidental pesticide	Female	2	—	—	1	—
	Male	2	1	—	1	1
	Total	4	1	—	2	1
Poisoning	Female	48	49	37	51	53
	Male	44	32	26	41	42
	Total	92	81	63	92	95
Diarrhea	Female	58	55	63	75	81
	Male	45	55	45	51	53
	Total	103	110	108	126	134
Respiratory diseases (all) [2]	Female	3,026	3,160	3,090	2,869	2,873
	Male	2,682	2,537	2,540	2,442	2,487
	Total	5,708	5,697	5,630	5,311	5,360
TOTAL CASES, all causes	**Female**	**3,257**	**3,352**	**3,279**	**3,094**	**3,121**
	Male	**2,885**	**2,723**	**2,685**	**2,603**	**2,685**
	Total	**6,142**	**6,075**	**5,964**	**5,697**	**5,806**
Percentage change (%)	**Female**	**-8.15**	**+2.92**	**-2.18**	**-5.64**	**+0.87**
	Male	**-5.44**	**-5.62**	**-1.40**	**-3.05**	**+3.15**
	Total	**-6.90**	**-1.09**	**-1.83**	**-4.48**	**+1.91**

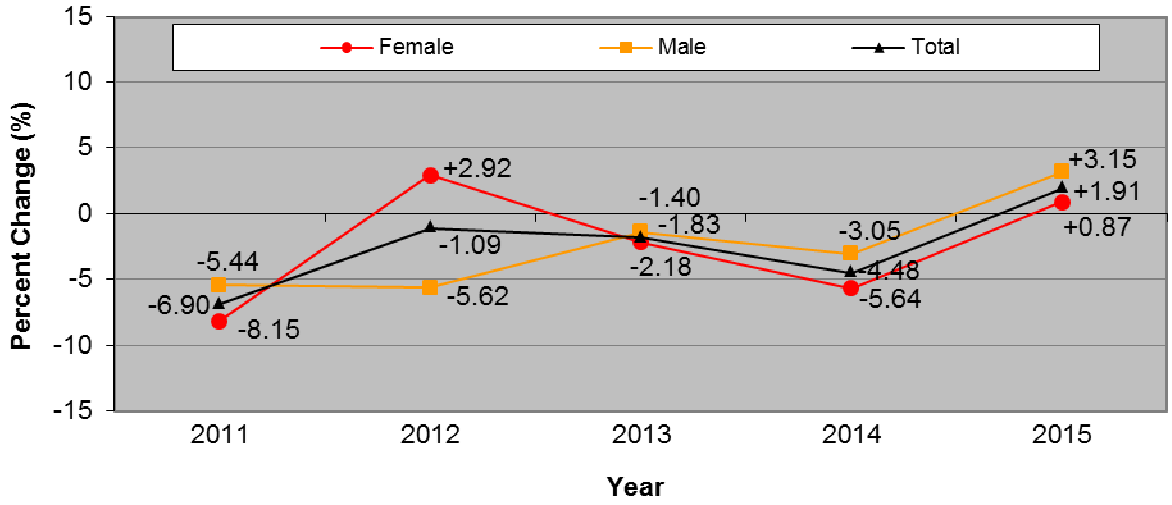
Sources: Department of Health and Bermuda Hospital Board

[1] 2011-2015 includes inpatient discharges and emergency encounters.

[2] Respiratory diseases (all) includes acute bronchitis, chronic sinusitis, asthma, pneumonia, etc.

Chart 3.1

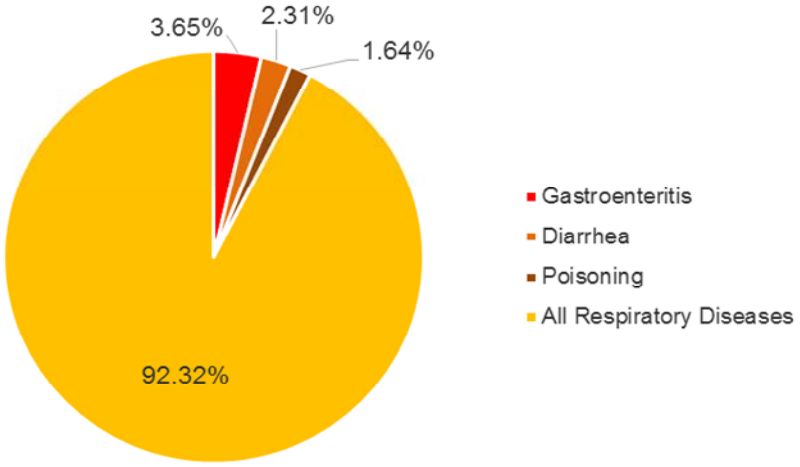
Growth in Reported Cases of Environmentally-Related Diseases by Sex and Total, 2011 - 2015



Sources: Department of Health and Bermuda Hospital Board

Chart 3.2

Reported Cases of Environmentally-Related Diseases by Cause, 2015



Sources: Department of Health and Bermuda Hospital Board

Table 3.2

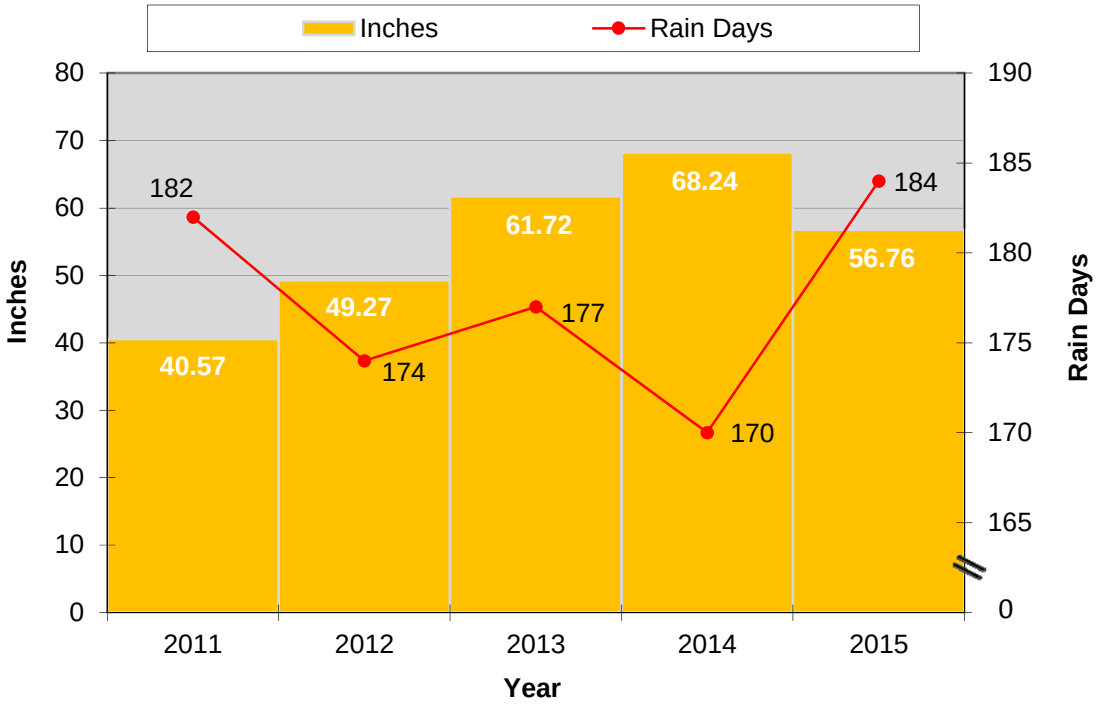
Total Number of Inches of Rainfall and Rain Days, 2011 - 2015

Year		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
2011	**Inches**	5.19	1.87	2.51	2.13	0.62	0.97	5.02	7.16	3.22	5.94	3.36	2.58	40.57
	Rain Days	20	12	16	6	16	8	15	24	14	17	19	15	182
2012	**Inches**	3.88	2.13	0.79	1.87	4.36	5.50	2.89	4.50	9.28	5.12	6.16	2.79	49.27
	Rain Days	18	13	8	13	10	14	11	17	16	16	23	15	174
2013	**Inches**	2.07	6.48	5.47	3.58	1.95	4.58	3.11	10.43	9.76	6.21	3.37	4.71	61.72
	Rain Days	16	18	19	13	10	8	9	15	22	17	14	16	177
2014	**Inches**	6.23	8.08	4.78	1.94	3.04	2.57	4.04	14.09	4.05	7.43	8.87	3.12	68.24
	Rain Days	18	13	19	8	6	11	13	21	14	13	17	17	170
2015	**Inches**	4.04	9.15	2.87	3.95	1.20	2.95	8.94	5.59	5.00	6.09	2.85	4.13	56.76
	Rain Days	19	19	17	14	8	8	20	14	17	20	17	11	184

Source: The Bermuda Weather Service

Chart 3.3

Total Number of Inches of Rainfall and Rain Days, 2011 - 2015



Source: The Bermuda Weather Service

Table 3.3

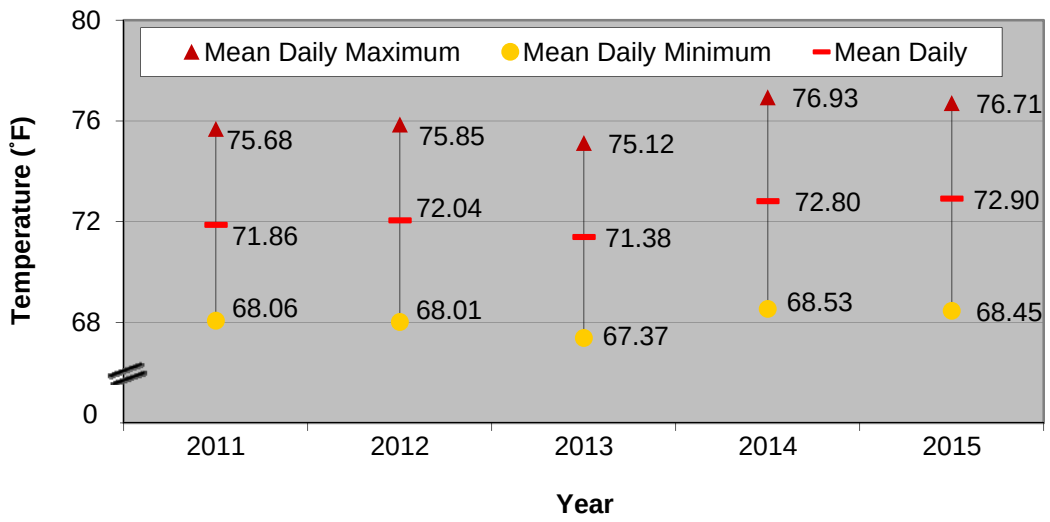
Mean Daily Maximum, Minimum and Daily Air Temperature, 2011 - 2015

Year		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	(°F) Yearly Average
2011	**Mean Daily Max.**	66.70	67.30	67.80	71.30	74.70	80.40	85.00	84.90	84.10	79.60	75.20	71.20	75.68
	Mean Daily Min.	58.70	58.80	59.60	64.30	67.10	72.50	76.70	77.20	77.10	72.10	68.80	63.80	68.06
	Mean Daily	62.90	63.20	63.70	67.40	70.50	76.00	80.70	81.50	80.70	76.00	71.90	67.80	71.86
2012	**Mean Daily Max.**	69.10	68.50	69.90	71.20	74.00	77.90	84.50	85.90	82.90	80.30	74.70	71.30	75.85
	Mean Daily Min.	60.10	60.20	61.20	62.80	67.20	70.70	77.00	78.40	75.20	73.80	67.00	62.50	68.01
	Mean Daily	65.10	64.70	65.50	66.90	70.50	74.40	80.40	82.10	79.30	77.10	71.10	67.40	72.04
2013	**Mean Daily Max.**	68.00	67.20	66.30	69.90	73.00	80.40	85.60	84.80	82.30	79.60	73.00	71.30	75.12
	Mean Daily Min.	60.00	59.60	58.70	62.30	65.50	73.20	77.20	75.90	74.40	72.50	65.40	63.70	67.37
	Mean Daily	64.40	63.50	62.60	66.20	69.20	76.70	81.40	80.70	78.50	76.00	69.50	67.80	71.38
2014	**Mean Daily Max.**	70.50	71.70	70.00	72.20	74.80	80.00	83.80	84.00	85.50	81.40	75.80	73.40	76.93
	Mean Daily Min.	63.00	63.50	61.80	65.50	66.80	71.70	76.70	74.90	75.20	71.60	66.60	65.00	68.53
	Mean Daily	67.00	67.70	66.00	68.70	70.70	75.80	80.20	79.80	80.20	76.50	71.70	69.30	72.80
2015	**Mean Daily Max.**	70.60	67.70	68.90	71.70	75.40	82.10	85.80	85.30	84.40	79.90	75.30	73.40	76.71
	Mean Daily Min.	61.90	58.50	60.60	63.60	68.50	74.60	71.10	77.90	77.10	72.70	68.70	66.20	68.45
	Mean Daily	66.60	63.40	64.80	67.80	71.60	78.20	81.40	81.70	80.70	76.50	72.10	70.00	72.90

Source: The Bermuda Weather Service

Chart 3.4

Mean Daily Maximum, Minimum and Daily Air Temperature, 2011 - 2015



Source: The Bermuda Weather Service

Table 3.4

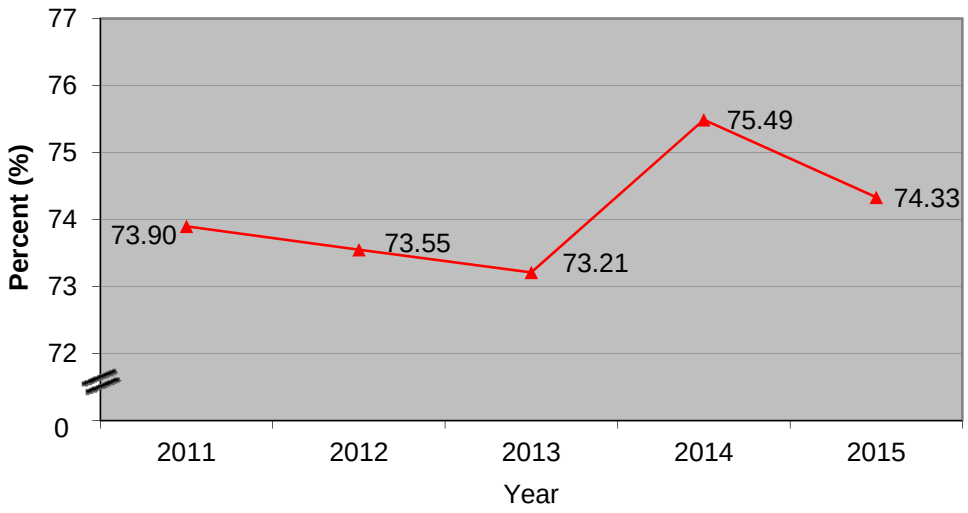
Mean Relative Humidity, 2011 - 2015

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	(%) Yearly Average
2011	70.50	72.10	73.80	77.10	74.40	74.90	75.70	79.40	78.10	72.00	70.30	68.50	73.90
2012	72.40	69.80	70.50	71.50	77.00	78.70	78.10	74.10	73.00	75.00	71.80	70.70	73.55
2013	71.30	69.70	69.50	76.90	72.00	76.90	71.70	74.50	76.80	76.50	67.80	74.90	73.21
2014	74.80	77.90	69.50	71.90	68.60	76.80	76.10	82.60	81.50	77.40	77.30	71.50	75.49
2015	70.20	70.80	69.60	74.20	73.50	79.20	75.70	76.60	76.00	76.90	71.30	77.90	74.33

Source: The Bermuda Weather Service

Chart 3.5

Mean Relative Humidity, 2011 - 2015



Source: The Bermuda Weather Service

Millennium Development Goal 7
Indicator 30
Proportion of population with sustainable access to an improved water source
100%

The percentage of the population who use any of the following types of water supply for drinking: piped water, public tap, borehole or pump, protected well, protected spring or rainwater to the total population, expressed as a percentage. Improved water sources do not include vendor-provided water, bottled water, tanker trucks or unprotected wells and springs.

Access to safe water refers to the percentage of the population with reasonable access to an adequate supply of safe water in their dwelling or within a convenient distance of their dwelling.

Millennium Development Goal 7
Indicator 31
Proportion of population with access to improved sanitation
100%

The percentage of the population with access to improved excreta-disposal. Facilities such as sewers or septic tanks, poor-flush latrines and simple pit latrines are assumed to be adequate, provided that they are not public. To be effective, facilities must be correctly constructed and properly maintained.

SECTION 4

NATURAL AND ENVIRONMENTAL DISASTERS

Occurrences of natural and environmental disasters are very rare in Bermuda.

Hurricanes

• The damage caused by Hurricane Joaquin in October 2015 was generally inconsequential (Table 4.1).

Fires

• The total number of fires reported in Bermuda increased from 1,804 in 2014 to 1,875 in 2015 (3.94%) (Table 4.2).

• In 2015, the majority of fires (49.76%) were classified in the "Structure" category (Table 4.2).

NOTE TO READER

Natural Disaster: a natural event which overwhelms local capacity, necessitating a request for national or international assistance, or is recognized as such by a multilateral agency, or by at least two sources, such as national, regional or international assistance groups and the media. There are two types: sudden-impact disasters e.g. earthquakes; or those that develop gradually, e.g. drought.

Types of Disaster: Avalanches, floods, earthquakes, hurricanes, torrential rains, volcanic eruptions, droughts, landslides, mudslides, fires, blizzards, tsunamis, etc.

Source: CARICOM Environment Programme

Table 4.1

Natural Disasters, 2015

Item	
Type of disaster	Hurricane
Date started	October 4th
Total casualties:	—
of which: dead	—
Total population affected[1]	37,220
Damage ($ million)	—

Source: Bermuda Institute of Ocean Science- Bermuda Risk

[1] Persons in households who lost electricity due to hurricane Joaquin. The calculation is 57.13% of total households (26,923) X average persons per household (2.42) = 37,220.

Table 4.2

Incidences of Fire by Type, 2011 - 2015

Year	Total	Minor Incidents	Structure[1]	Island Fires	Vehicle	Boat Fires	Other[2]
2011	**1,841**	372	655	—	26	2	786
2012	**1,777**	412	597	..	17	..	751
2013	**1,830**	372	495	..	13	..	950
2014	**1,804**	512	629	..	28	..	635
2015	**1,875**	318	933	..	26	..	598

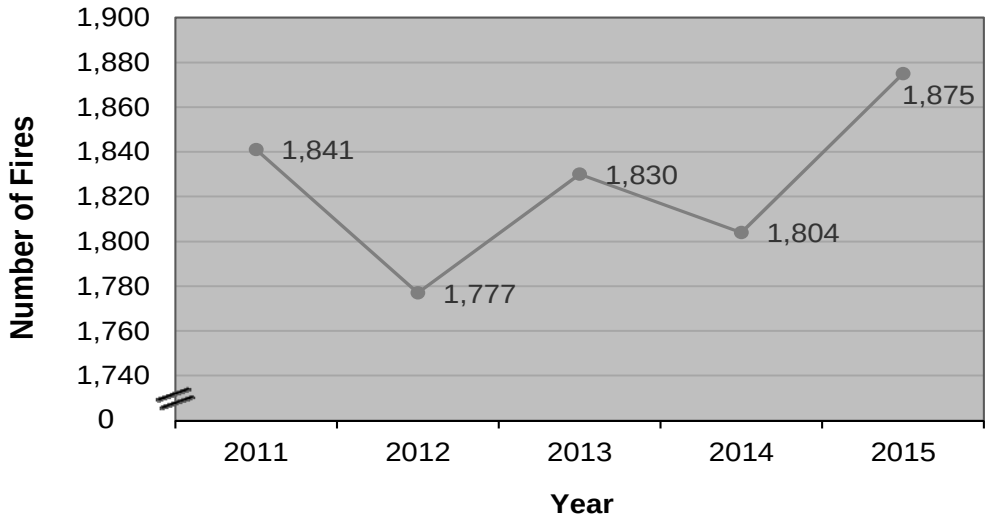
Source: Bermuda Fire and Rescue Service

[1] Includes false alarms.

[2] Reflects the activities of the Crash and Fire Rescue Service in other emergency duties such as Airport Operations Division incidents, foreign object debris checks, hot refuel, aircraft standby, etc.

Chart 4.1

Total Incidences of Fires, 2011 - 2015



Source: Bermuda Fire and Rescue Service

SECTION 5

ENERGY, MINERALS AND TRANSPORT

The Energy, Minerals and Transport Section comprises information on the types of fuels imported to Bermuda such as gasoline, diesel and propane. It also contains statistics on electricity consumption by type of consumer and the types of vehicles on Bermuda's roads.

Fuel

• In 2015, the value of imported petroleum oils and oils from bituminous minerals, other than crude imported into Bermuda, was roughly $90 million, a decrease of 39.95 percent from the total value imported in 2014 (Table 5.1).

• The quantity of imported fuels decreased to around 169 million kg in 2015, a decrease of 19.05 percent over the previous year (Table 5.1).

Mineral Fuels

• In 2015, the value of imported mineral fuels, mineral oils and related products dropped to $92 million. This is a 39.86% decrease from the $153 million imported in 2014 (Table 5.2).

Electricity

• Total electricity consumption in 2015 grew to approximately 590 million kWh from 577 million kWh in 2014. The commercial sector accounted for just under half (49.21%) of all electricity consumed in Bermuda (Table 5.3).

Transport

• In 2015, there were 47,092 registered road vehicles in Bermuda. Private cars accounted for nearly half (45.88%) of this total, while just under one-third (33.25%) were motorcycles and scooters (Table 5.6).

Table 5.1

Value of Imported Fuel[1] by Type, 2013 - 2015

Type	2013 Value ($)	2013 Quantity (kg)	2014 Value ($)	2014 Quantity (kg)	2015 Value ($)	2015 Quantity (kg)
Light oils & preparations (i.e. motor spirits)	32,608,135	22,840,574	30,900,182	23,460,256	14,718,077	15,158,486
Gas oils (diesel)	17,208,412	11,807,581	9,297,419	13,062,959	5,849,354	7,779,153
Gas oils (heavy atmospheric)	20,237,831	20,018,449	24,168,550	45,559,746	11,935,809	22,074,662
Kerosene & other medium oils (not including gas oils)	17,546,376	14,574,613	18,770,636	22,506,801	11,374,549	20,208,931
Fuel oils not elsewhere specified	61,480,353	94,558,392	61,749,226	102,770,849	42,503,568	102,464,241
Other lubricating oils & greases, etc.	4,826,875	1,471,291	4,038,685	1,244,945	3,104,778	1,198,566
Other waste oils	29,677	4,203	113,915	34,751	15,524	2,256
Total	**153,937,659**	**165,275,103**	**149,038,613**	**208,640,307**	**89,501,659**	**168,886,295**

Source: Department of Statistics

[1] Petroleum oils and oils obtained from bituminous minerals, other than crude.

Table 5.2

Value of Imported Mineral Fuels, Mineral Oils and Related Products Consumed by Type, 2013 - 2015

Type	2013 Value ($)	2013 Quantity (kg)	2014 Value ($)	2014 Quantity (kg)	2015 Value ($)	2015 Quantity (kg)
Coal, briquettes	10,833	7,728	9,848	7,510	20,996	7,707
Lignite	—	—	—	—	—	—
Peat	76,793	80,751	63,339	62,238	66,718	48,576
Coke and semi coke	93,740	66,765	98,397	64,261	85,425	50,116
Coal gas, water gas	—	—	—	—	—	—
Tar distilled	644	1,318	1,901	2,663	3,960	5,974
Oils and other products	5,632	833	10,995	2,429	97,511	3,209
Pitch and pitch coke	—	—	—	—	—	—
Petroleum oils	—	—	—	—	—	—
Petroleum oils other than crude	153,937,659	165,275,103	149,038,614	208,640,307	89,501,658	168,886,296
Petroleum gases & other gaseous hydrocarbons	3,040,172	4,113,088	2,829,685	6,724,734	1,491,365	3,723,766
Petroleum jelly	38,266	11,944	50,868	20,685	126,896	76,613
Petroleum coke	98,307	28,700	17,676	2,072	66,894	7,170
Other bitumen and asphalt	5,167	35,769	4,437	24,719	10,140	7,689,946
Bituminous mixtures	469,124	673,167	420,572	596,870	262,471	437,774
Electrical energy	—	—	—	—	—	—
Total	**157,776,337**	**170,295,166**	**152,546,332**	**216,148,488**	**91,734,034**	**180,937,147**

Source: Department of Statistics

Table 5.3

Electricity Consumption by Type of Consumer, 2011 - 2015

Year	Per Capita Electricity Consumption (kWh)	Total (‘000 kWh)	Type		
			Residential (‘000 kWh)	Commercial (‘000 kWh)	Other [1] (‘000 kWh)
2011	10,073	**636,517**	265,243	316,356	54,918
2012	9,716	**606,346**	249,749	307,269	49,328
2013	9,470	**586,704**	244,421	295,043	47,240
2014	9,346	**577,365**	235,523	291,350	50,492
2015	9,564	**590,427**	245,498	290,552	54,377

Source: Bermuda Electric Light Company Ltd.

[1] Includes street lighting paid by Parish Councils and sales to Government for offices, distillation plant, etc.

Table 5.4

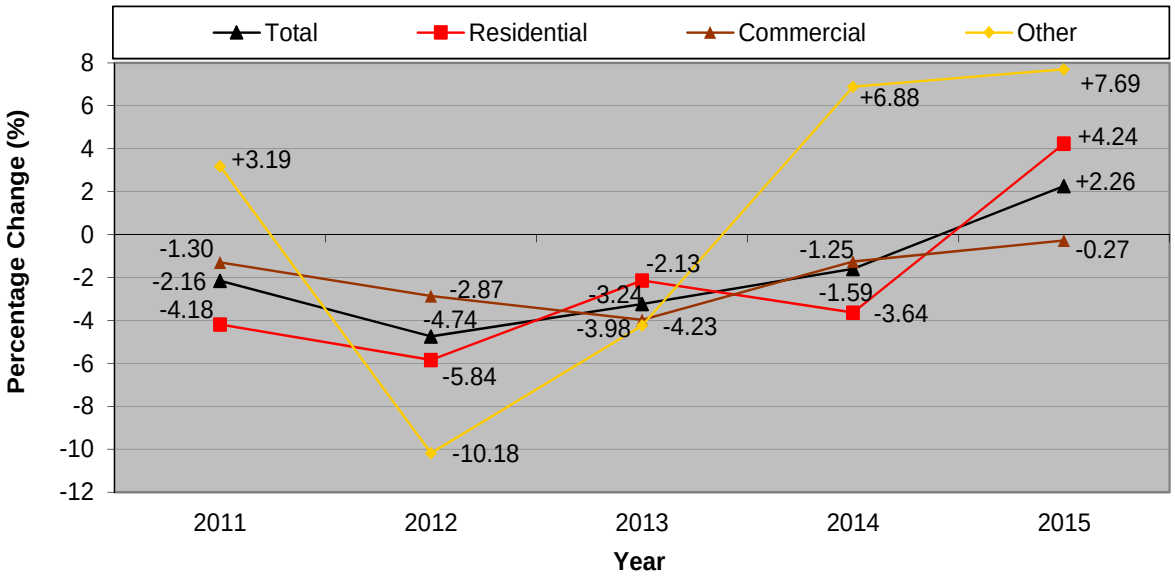
Growth in Electricity Consumption by Type of Consumer, 2011 - 2015

Year	Growth Total Electricity Consumption %	Type		
		Residential %	Commercial %	Other %
2011	**-2.16**	-4.18	-1.30	+3.19
2012	**-4.74**	-5.84	-2.87	-10.18
2013	**-3.24**	-2.13	-3.98	-4.23
2014	**-1.59**	-3.64	-1.25	+6.88
2015	**+2.26**	+4.24	-0.27	+7.69

Source: Bermuda Electric Light Company Ltd.

Chart 5.1

Growth in Electricity Consumption by Type of Consumer and Total Consumption, 2011 - 2015



Source: Bermuda Electric Light Company Ltd.

Table 5.5

Percentage of Total Electricity Consumption by Type of Consumer, 2011 - 2015

		Type		
		Residential	Commercial	Other
Year	Total	%	%	%
2011	**100**	41.67	49.70	8.63
2012	**100**	41.19	50.68	8.14
2013	**100**	41.66	50.29	8.05
2014	**100**	40.79	50.46	8.75
2015	**100**	41.58	49.21	9.21

Source: Bermuda Electric Light Company Ltd.

Table 5.6

Registered Road Vehicles [1], 2011 - 2015

Type	2011	2012	2013	2014	2015
Private Cars	21,991	21,707	21,564	21,464	21,607
Buses, Minibuses & Limousines	179	185	187	190	208
Taxis	588	579	581	576	564
Trucks	3,870	3,746	3,655	3,620	3,583
Trailers	313	321	288	290	280
Farm Tractors	22	26	25	29	29
Ambulances & Fire Engines	46	41	44	46	45
Military Vehicles	33	36	32	31	33
Tractors & Tractor Trailers	418	393	376	338	319
Light Private Cars	107	94	81	80	76
Auxiliary Cycles [2]	5,232	4,754	4,458	4,196	4,074
Motor Cycles & Scooters	15,163	14,887	15,009	15,134	15,659
Construction Vehicles [3]	71	72	60	53	53
Government Private (GP) Vehicles [4]	247	257	252	254	244
Other [5]	381	361	335	324	318
Total	**48,661**	**47,459**	**46,947**	**46,625**	**47,092**
Percentage Change (%)	**-2.02**	**-2.47**	**-1.08**	**-0.69**	**+1.00**

Source: Transport Control Department

[1] Number of vehicles for which a valid license was in effect as of 31st December.

[2] Includes livery cycles.

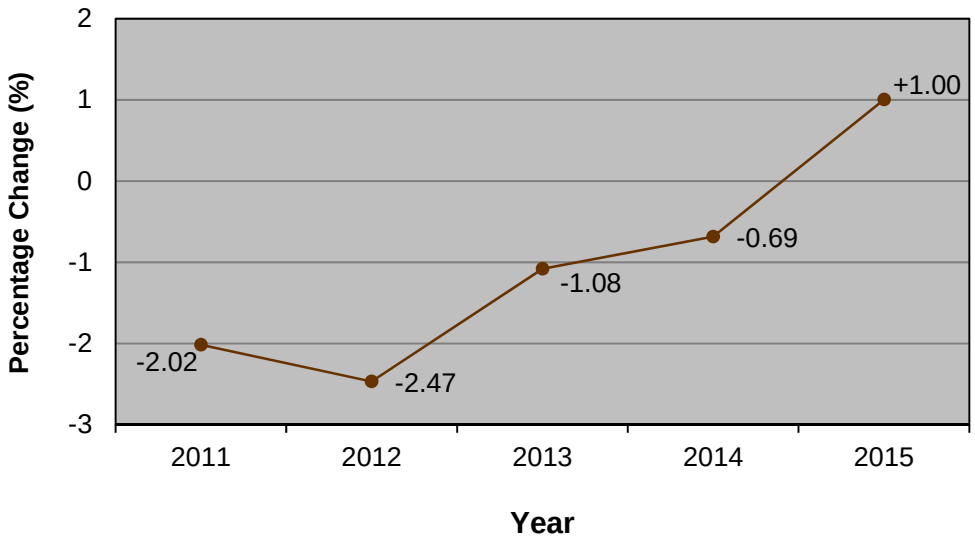
[3] Includes cement mixers.

[4] Includes cars (classes A-H) and minibuses.

[5] Includes classic cars, community service vehicles, doctors' cars, garbage trucks, hearses, instructional vehicles, loaner vehicles, locomotives, police utility vehicles, public carriages and sporting associations.

Chart 5.2

Growth in Registered Road Vehicles, 2011 - 2015



Source: Transport Control Department

SECTION 6

AGRICULTURE

The Agriculture Section includes tables and charts on the importation of fertilizers and pesticides to Bermuda.

Fertilizers and Pesticides

• In 2015, the value of fertilizers imported into Bermuda totaled nearly $607 thousand for 270,256 kg (Table 6.1).

• In 2015, other fertilizers accounted for almost half (48.96%) of the total value of fertilizers imported to Bermuda (Table 6.1)

• In 2015, the value of pesticides imported into Bermuda totaled approximately $2 million for 556,453 kg (Table 6.2).

• In 2015, insecticides accounted for $867 thousand of imported pesticides. Disinfectants represented 40.79% (226,962 kg) of the total quantity of imported pesticides (Table 6.2).

Table 6.1

Imported Fertilizers by Type, 2013 - 2015

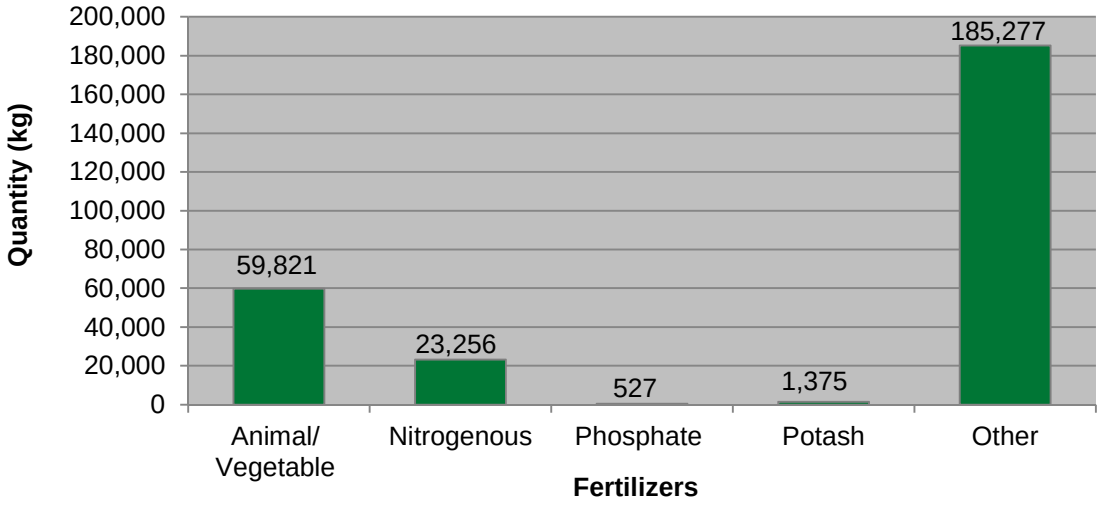
Category	2013 Value ($)	2013 Quantity (kg)	2014 Value ($)	2014 Quantity (kg)	2015 Value ($)	2015 Quantity (kg)
Animal/Vegetable fertilizers	165,631	79,068	240,880	89,430	205,005	59,821
Nitrogenous fertilizers	131,917	82,498	56,608	34,120	75,123	23,256
Phosphate fertilizers	17	7	438	100	20,412	527
Potash fertilizers	360	91	6,252	153	9,250	1,375
Other fertilizers [1]	361,788	210,568	345,436	192,399	297,176	185,277
Total	**659,713**	**372,232**	**649,614**	**316,202**	**606,966**	**270,256**
Percentage change (%)	**-7.92**	**-4.99**	**-1.53**	**-15.05**	**-6.56**	**-14.53**

Source: Department of Statistics

[1] Other fertilizers include mixtures of two or three of the fertilizing elements nitrogen, phospho

Chart 6.1

Imported Fertilizers by Type, 2015



Source: Department of Statistics

Table 6.2

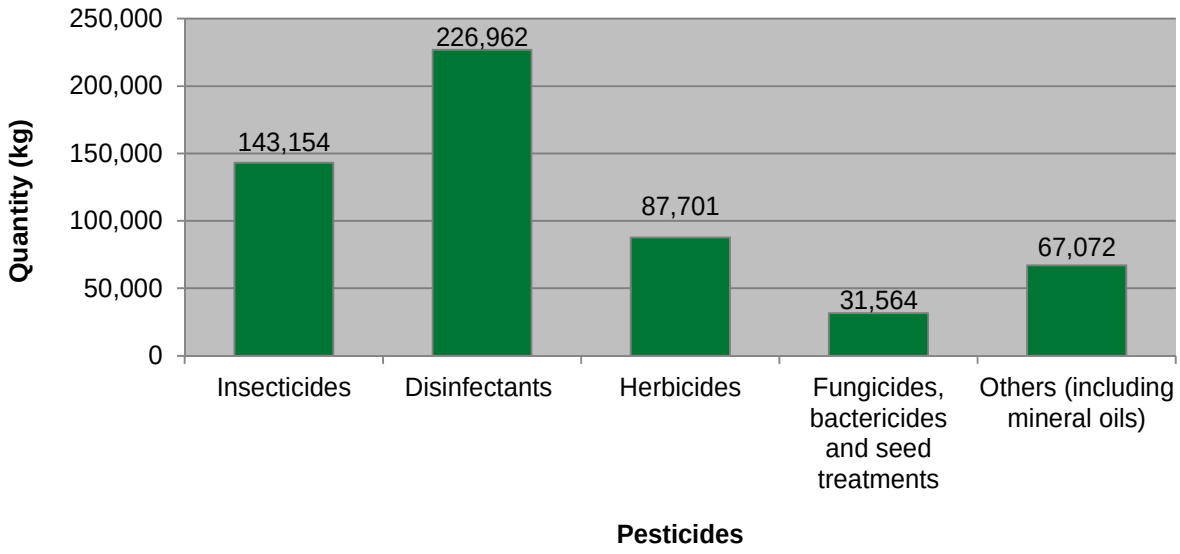
Imported Pesticides by Type, 2013 - 2015

Category	2013 Value ($)	2013 Quantity (kg)	2014 Value ($)	2014 Quantity (kg)	2015 Value ($)	2015 Quantity (kg)
Insecticides	854,812	169,601	811,823	135,776	866,730	143,154
Disinfectants	478,632	55,464	467,428	164,707	490,923	226,962
Herbicides	311,135	104,964	236,482	76,685	339,472	87,701
Fungicides, bactericides and seed treatments	134,383	32,025	92,493	50,744	115,513	31,564
Others (including mineral oils)	190,658	74,525	182,883	72,252	185,043	67,072
Total	**1,969,620**	**436,579**	**1,791,109**	**500,164**	**1,997,681**	**556,453**
Percentage change (%)	**+13.14**	**+6.00**	**-9.06**	**+14.56**	**+11.53**	**+11.25**

Source: Department of Statistics

Chart 6.2

Imported Pesticides by Type, 2015



Source: Department of Statistics

SECTION 7

LAND USE

The data in the Land Use Section was collected in 2001 by the Department of Planning and has not been updated.

Land Use

• Residential properties occupied 45.10 percent of all land in Bermuda, covering roughly 5,984 acres of land (Table 7.1).

• Nearly 4,417 acres were dedicated to open space land use which comprises of golf courses, nature reserves, other recreation and rural areas. This represents about one-third (33.29%) of Bermuda's land (Table 7.1).

• Land used for commercial purposes (such as retail and office space) accounted for 1.70 percent of all occupied land space in Bermuda (Table 7.1).

Parishes

• A comparison of land use by parish showed that St. George's holds the largest share of land (2,162.71 acres) and Pembroke has the least (1,170.26 acres) (Table 7.2.2).

Municipalities

• Among the two municipalities, the City of Hamilton occupies the least amount of land in Bermuda (176.34 acres) while the Town of St. George occupies the greatest (341.00 acres) (Table 7.2.2).

Table 7.1

Land Use, 2015

Main Use	Sub-Category	Total Area (Acres)	Percentage Distribution
Commercial	Mixed-use	36.45	0.27
	Office	63.03	0.48
	Retail	126.16	0.95
	Total	**225.64**	**1.70**
Industrial	General	200.42	1.51
	Light industrial	64.37	0.49
	Quarry	56.81	0.43
	Total	**321.60**	**2.43**
Institutional	Education	254.20	1.92
	Government	63.97	0.48
	Hospital	30.32	0.23
	Police	59.07	0.45
	Prison	16.76	0.13
	Religious	87.48	0.66
	Social	12.24	0.09
	Total	**524.04**	**3.96**
Open space	Golf courses	808.77	6.10
	Nature reserve	1,258.08	9.48
	Other	946.23	7.13
	Recreation	240.92	1.82
	Rural	1,162.82	8.76
	Total	**4,416.82**	**33.29**
Residential	Condos	162.25	1.22
	Housing	5,799.45	43.71
	Institutional	22.18	0.17
	Total	**5,983.88**	**45.10**
Tourism	Cottage colonies	204.68	1.54
	Hotels	127.61	0.96
	Total	**332.29**	**2.50**
Utilities	Airport	548.42	4.13
	Docks	36.82	0.28
	BELCO	37.95	0.29
	Transport	44.04	0.33
	Waste	67.07	0.51
	Total	**734.30**	**5.54**
Vacant	Vacant buildings	119.90	0.90
	Vacant land	610.27	4.60
	Total	**730.17**	**5.50**
Total		**13,268.74**	**100.00**

Source: Department of Planning, Land Use Survey 2001

The 2001 Land Use Survey was based on the 1997 digital survey of the islands, whose coastline was probably taken at the high water mark hence the discrepancy in total area which now stands at 13,430.39 acres (low time mark) in 2007 as a result of the more accurate 2003 Topographic Mapping Database.

Table 7.2.1

Land Use by Parish, City and Town In Acres, 2015

Main Use / Sub-Category	The City of Hamilton	Devonshire	Hamilton	Paget	Pembroke	Sandy's	St. George's	Smith's	Southampton	Town of St. George	Warwick
Commercial	**66.79**	**10.82**	**11.01**	**16.39**	**27.16**	**26.95**	**32.50**	**2.92**	**10.16**	**11.05**	**9.89**
Mixed-use	32.18	—	—	—	—	—	—	—	—	4.27	—
Office	16.93	4.19	—	6.57	15.11	—	18.96	—	—	0.45	0.83
Retail	17.68	6.63	11.01	9.82	12.05	26.95	13.54	2.92	10.16	6.33	9.06
Industrial	**12.34**	**18.85**	**47.45**	**4.12**	**55.59**	**13.91**	**99.55**	**21.09**	**21.79**	**8.92**	**18.00**
General	5.96	11.34	11.49	0.74	52.94	13.91	66.59	9.46	18.91	1.30	7.78
Light industrial	6.38	7.51	—	3.38	2.65	—	32.96	—	2.88	7.62	1.00
Quarry	—	—	35.96	—	—	—	—	11.63	—	—	9.22
Institutional	**30.65**	**72.62**	**12.95**	**66.43**	**96.85**	**60.57**	**48.09**	**15.81**	**30.66**	**34.29**	**55.09**
Education	4.35	35.96	8.89	27.93	47.78	25.28	27.30	11.29	16.96	20.42	28.04
Government	12.54	11.03	—	8.87	25.49	1.15	1.48	—	—	2.94	0.47
Hospital	0.51	11.26	—	14.74	0.62	3.18	—	—	—	—	—
Police	1.14	9.33	—	—	1.30	15.43	15.47	—	6.83	0.54	9.02
Prison	5.25	—	—	4.59	2.81	—	1.53	—	—	—	2.57
Religious	6.58	5.04	4.06	10.30	15.67	11.85	2.31	4.52	6.87	10.00	10.28
Social	0.28	—	—	—	3.18	3.68	—	—	—	0.39	4.71
Utilities	**26.88**	**23.83**	**11.42**	—	**23.77**	**20.35**	**606.22**	**6.71**	**5.07**	**9.80**	**0.22**
Airport	—	—	—	—	—	—	548.42	—	—	—	—
Docks	10.28	0.36	—	—	0.29	15.08	6.54	—	0.33	3.70	0.22
BELCO	0.46	4.37	—	—	20.32	0.12	4.10	6.71	1.43	0.44	—
Transport	16.14	4.97	0.58	—	3.16	2.48	10.18	—	3.31	3.22	—
Waste	—	14.13	10.84	—	—	2.67	36.98	—	—	2.44	—

Source: Department of Planning, Land Use Survey 2001

The 2001 Land Use Survey was based on the 1997 digital survey of the islands, whose coastline was probably taken at the high water mark hence the discrepancy in total area which now stands at 13,430.39 acres (low time mark) in 2007 as a result of the more accurate 2003 Topographic Mapping Database.

Table 7.2.2

Land Use by Parish, City and Town In Acres, 2015

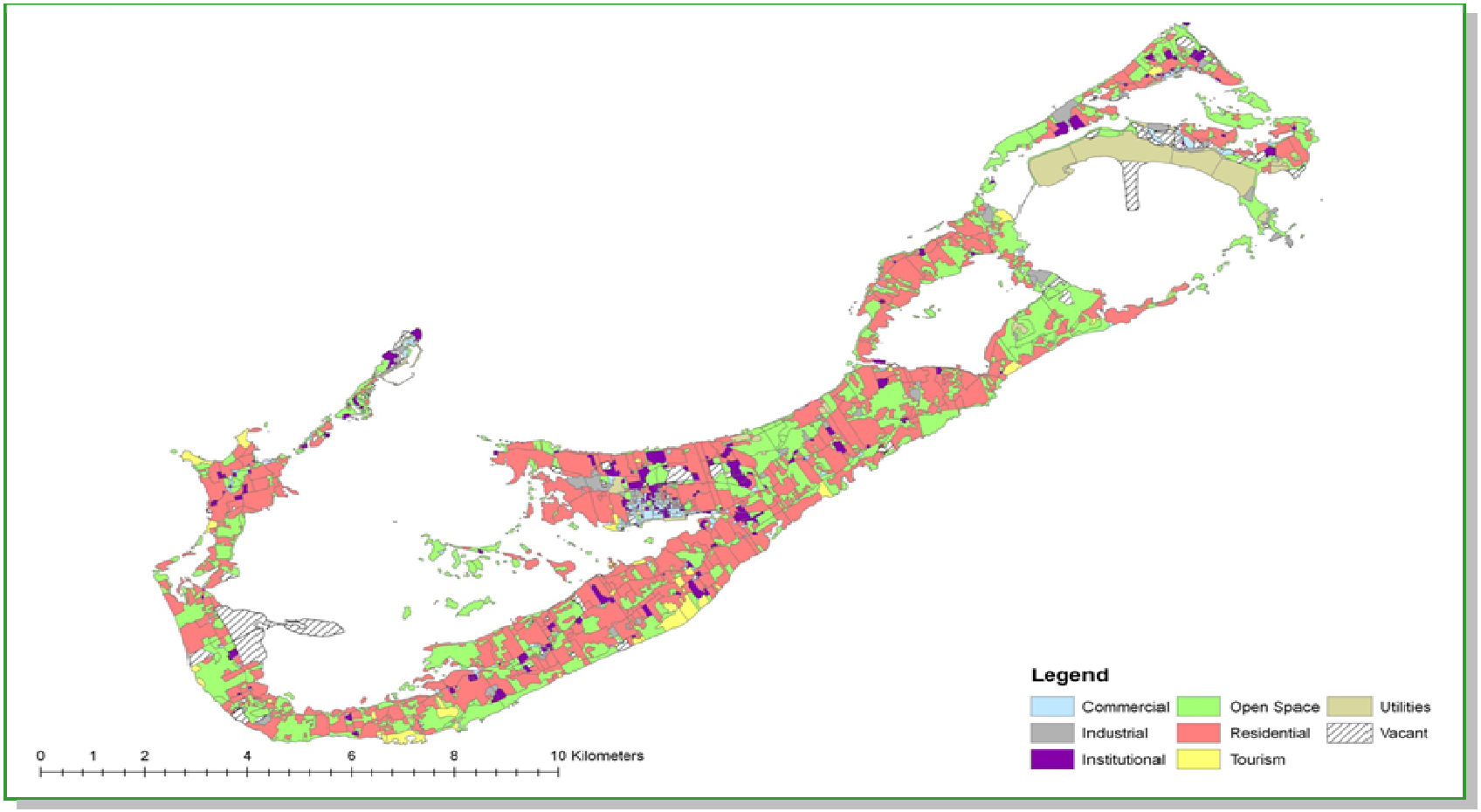
Main Use / Sub-Category	The City of Hamilton	Devonshire	Hamilton	Paget	Pembroke	Sandy's	St. George's	Smith's	Southampton	Town of St. George	Warwick
Residential	**27.40**	**562.37**	**585.43**	**803.55**	**758.12**	**669.53**	**450.30**	**709.70**	**610.69**	**99.00**	**707.79**
Condos	—	27.99	15.34	21.81	11.86	20.39	6.12	10.58	24.64	2.70	20.81
Housing	25.73	527.16	570.09	779.98	742.79	645.42	444.18	696.02	586.05	95.89	686.15
Institutional	1.67	7.22	—	1.76	3.47	3.72	—	3.10	—	0.41	0.83
Tourism	—	**14.17**	**18.68**	**112.14**	**15.71**	**44.70**	**3.95**	**15.29**	**88.74**	**10.16**	**8.74**
Cottage colonies	—	14.17	18.68	62.36	3.03	44.70	3.95	15.29	23.59	10.16	8.74
Hotels	—	—	—	49.78	12.68	—	—	—	65.15	0.00	—
Open space	**7.92**	**499.31**	**611.26**	**296.83**	**132.29**	**383.02**	**715.61**	**432.66**	**614.39**	**138.75**	**584.83**
Golf courses	—	76.64	127.69	10.82	—	5.35	139.50	—	198.05	79.72	171.01
Nature reserve	6.44	163.71	156.15	70.33	73.99	107.83	296.43	106.00	104.32	8.39	164.50
Other	1.48	56.96	167.89	59.25	25.38	123.99	218.85	75.27	121.68	30.21	65.29
Recreation	—	35.37	9.11	4.23	27.27	33.92	35.97	24.83	16.85	—	53.37
Rural	—	166.63	150.42	152.20	5.65	111.93	24.86	226.56	173.49	20.43	130.66
Vacant	**4.36**	**19.46**	**13.98**	**3.48**	**60.74**	**219.40**	**206.52**	**12.15**	**130.19**	**29.05**	**30.84**
Vacant buildings	0.74	—	13.98	3.11	0.27	22.31	51.16	—	—	18.79	9.54
Vacant land	3.62	19.46	—	0.37	60.47	197.09	155.36	12.15	130.19	10.26	21.30
Total	**176.34**	**1,221.43**	**1,312.19**	**1,302.95**	**1,170.26**	**1,438.42**	**2,162.71**	**1,216.34**	**1,511.69**	**341.00**	**1,415.41**

Source: Department of Planning, Land Use Survey 2001

The 2001 Land Use Survey was based on the 1997 digital survey of the islands, whose coastline was probably taken at the high water mark hence the discrepancy in total area which now stands at 13,430.39 acres (low time mark) in 2007 as a result of the more accurate 2003 Topographic Mapping Database.

Map 7.1

Land Use Survey, 2015



Source: Department of Planning

SECTION 8

COASTAL AND MARINE RESOURCES

This Section includes information on various marine areas by name, location, activities permitted in these areas and the date they were established in Bermuda. It also provides information about Bermuda's fishing industry.

Marine Protected Areas by Category and Area

• Bermuda's total marine area covers 4,236.11 km^2, of which 6.96% or 294.74 km^2 is classified as protected area (Table 8.1 and Chart 8.1).

• There are 29 protected dive sites located in Bermuda covering an area of 13.66 km^2 (Table 8.2).

• A total of 12 marine parks have been established in Bermuda covering an area of 1.86 km^2 (Table 8.2).

• There are two fisheries seasonal protected areas that measure 153.36 km^2 (Table 8.2).

• Two coral reef preserves occupy a total of 131.07 km^2 (Table 8.2).

Fisheries

• Fish landings totaled 402.29 metric tonnes (mT) in 2015, a decrease of 1.46% from 2014. The tuna and pelagic group was the most frequently caught species at 136.36 mT (Table 8.4).

• In 2015, 300 registered fishermen spent a total of 77,112 hours at sea. The 2.39% increase in registered fishermen accounted for 777 more hours (1.02%) at sea (Table 8.5).

Table 8.1

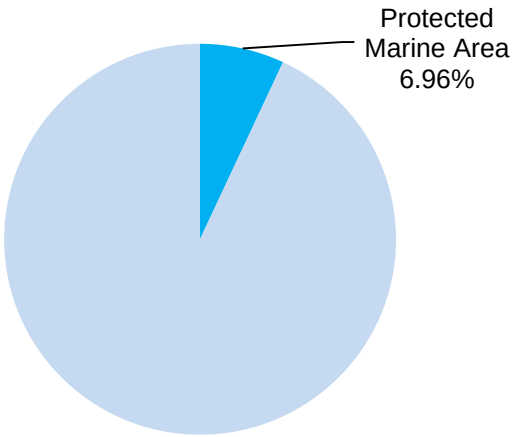
Total and Protected Marine Area, 2015

Indicator	
Total land and marine area (km^2)	4,290.46
Total marine area (km^2)	4,236.11
Protected marine area (km^2)	294.74
Protected marine area as a % of total marine area	6.96
Protected marine area as a % of total land and marine area	6.87

Source: Department of Planning

Chart 8.1

Protected Marine Area as a Percentage of Total Marine Area, 2015



Source: Department of Planning

Table 8.2

Marine Protected Areas by Category and Area, 2015

Marine Protected Areas	Area (km^2)
Coral Reef Preserves	
North Shore Coral Reef Preserve	126.25
South Shore Coral Reef Preserve	4.82
Subtotal	**131.07**
Fisheries Seasonal Protected Areas	
North Eastern Area	38.67
South Western Area	114.69
Subtotal	**153.36**
Marine Parks	
Somerset Long Bay Marine Park	0.01
Church Bay Marine Park	0.03
John's Smiths Bay Marine Park	0.08
Shelly Bay Marine Park	0.02
South Shore Marine Park	0.37
Castle Island Marine Park	0.69
Astwood Bay Marine Park	0.02
Walsingham Marine Park	0.22
Daniel's Head Marine Park	0.01
Cooper's Island Marine Park	0.28
Tobacco Bay Marine Park	0.08
Spittal Pond Marine Park	0.06
Subtotal	**1.86**

Marine Protected Areas	Area (km^2)
Protected Dive Sites	
North Rock	3.14
SW Breaker	1.13
Eastern Blue Cut	1.13
Pelinaion	0.79
Hermes	0.79
Constellation	0.79
Cristobal Colon	0.28
NE Breaker	0.28
Taunton	0.28
Aristo	0.28
Mills Breaker	0.28
Cathedral	0.28
Kate	0.28
Tarpon Hole	0.28
Marie Celeste	0.28
North Carolina	0.28
Airplane	0.28
Blanche King	0.28
Darlington	0.28
L'Herminie	0.28
Lartington	0.28
Montana	0.28
Snake Pit	0.28
Hog Breaker	0.28
Caraquet	0.28
Madiana	0.28
Commissioner's Point	0.13
Xing Da	0.13
Vixen	0.03
Subtotal	**13.66**

Marine Protected Areas	Area (km^2)
Merged marine protected areas (no overlaps)[1]	294.74
Territorial area (net)[2]	4,236.11

Source: Department of Planning

[1] Total marine protected area does not equal to the sum of the sub-totals as it excludes any overlapping areas (5.26 km^2) to avoid double counting.

[2] Territorial area (net) means total water area and does not include the land area of 54.35 km^2.

Table 8.3.1

Marine Protected Areas Around Bermuda, 2015

Marine Protected Area/ No-Take Reserve	Year Established	Anchoring Permitted?	Scuba Diving Permitted?	No-Take Reserve?
North Shore Coral Reef Preserve	1966	Yes	Yes	Line fishing is permitted throughout this Preserve, as is lobster diving and spear fishing provided they are within the limits of the prevailing fisheries regulations. It is an offence to remove, damage or be in possession of plants or animals, whether dead or alive, which are attached to the coast, the seabed or any reef in this preserve.
South Shore Coral Reef Preserve	1966	Yes	Yes	Line fishing is permitted throughout this Preserve, as is lobster diving and spear fishing provided they are within the limits of the prevailing fisheries regulations. It is an offence to remove, damage or be in possession of plants or animals, whether dead or alive, which are attached to the coast, the seabed or any reef in this preserve.
Vixen (Wreck)	1973	No	Yes	Yes
The Eastern Area	Established in 1974 but in 1990 the area was expanded to the current size.	Yes	Yes	Seasonally protected area, no fishing from 1 May to 31 August. First act (1974) stated no fishing between 1 May and 15 August. This was amended in 1975 to 24 May and 15 August, in 1976 it was amended to 1 May and 15 August, in 1990 it was amended to 1 May and 30 September and finally in 1993 it was amended to 1 May and 31 August. Trolling for pelagic species is permitted seaward of the 30 fathom depth contour and shore fishing is also permitted.
The South Western Area	Established in 1974 but in 1990 the area was expanded to the current size.	Yes	Yes	Seasonally protected area, no fishing from 1 May to 31 August. First act (1974) stated no fishing between 1 May and 15 August. This was amended in 1975 to 24 May and 15 August, in 1976 it was amended to 1 May and 15 August, in 1990 it was amended to 1 May and 30 September and finally in 1993 it was amended to 1 May and 31 August. Trolling for pelagic species is permitted seaward of the 30 fathom depth contour and shore fishing is also permitted.

Table 8.3.2

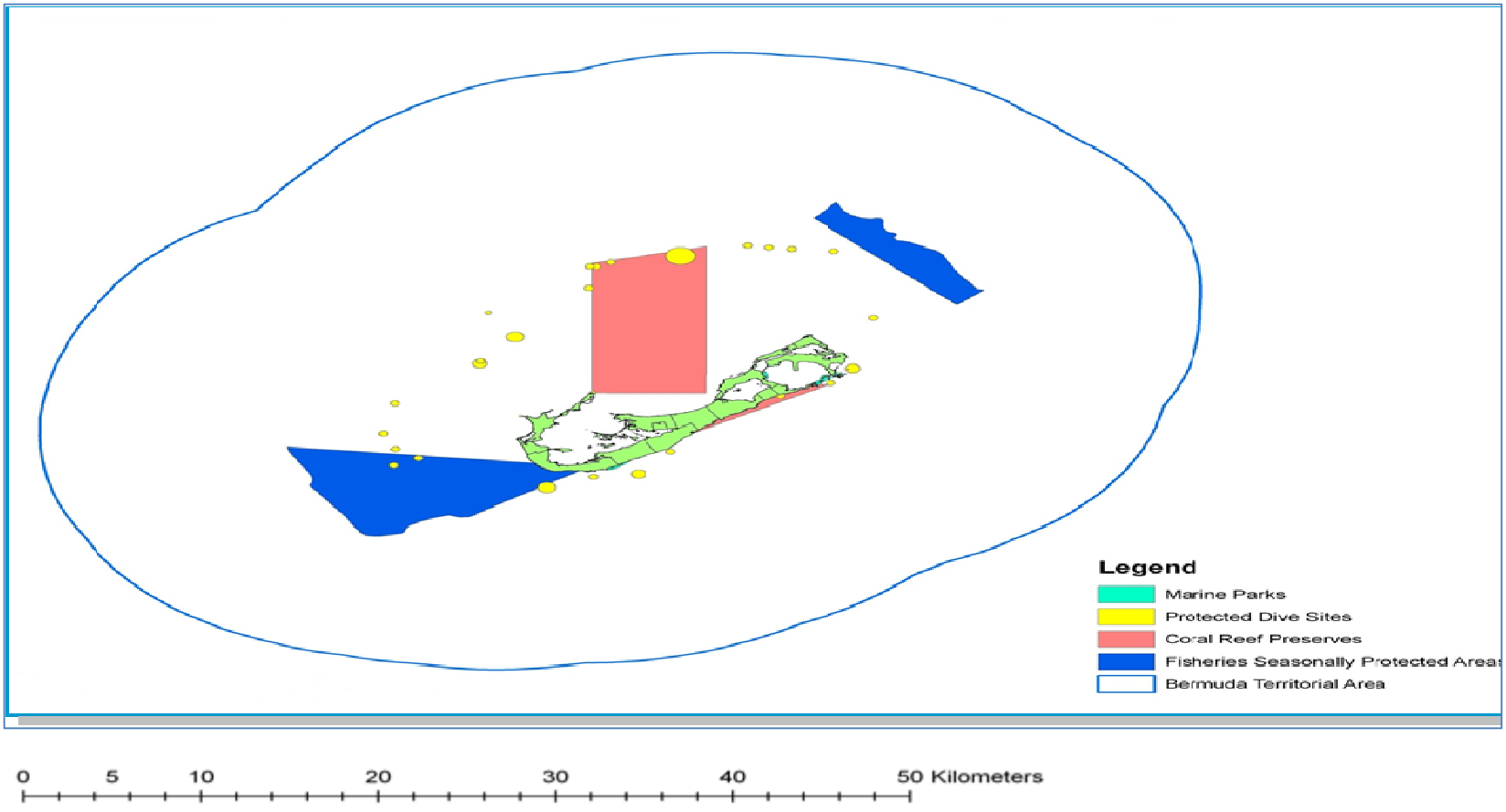
Marine Protected Areas Around Bermuda, 2015

Marine Protected Area/ No-Take Reserve	Year Established	Anchoring Permitted?	Scuba Diving Permitted?	No-Take Reserve?
Constellation (Wreck)	1988	No	Yes	Yes
South West Breaker Area	1988	No	Yes	Yes
Eastern Blue Cut	1989	No	Yes	Yes
Pelinaion and Rita Zovetta Wrecks)	1989	No	Yes	Yes
Kate (Wreck)	1989	No	Yes	Yes
Hermes and Minnie Bressleur (Wrecks)	1989	No	Yes	Yes
North Rock	1990	No	Yes	Yes
The North Eastern Area	1990 It was merged in 2005 with the Eastern Area and redesigned.	Yes	Yes	Seasonally protected area, no fishing from 1 May to 31 August. Initially there was no fishing between 1 May and 30 September, but in 1993 this was amended to 1 May and 31 August. Trolling for pelagic species is permitted seaward of the 30 fathom depth contour and shore fishing is also permitted.
Walsingham Marine Reserve	1991	No	Yes	Yes
Commissioner's Pt. Area	1996	No	Yes	Yes
Xing Da (Wreck)	1997	No	Yes	Yes
Cristobal Colon (Wreck)	2000	No	Yes	Yes
North East Breaker	2000	No	Yes	Yes
Taunton (Wreck)	2000	No	Yes	Yes
Aristo (Wreck)	2000	No	Yes	Yes
Mills Breaker	2000	No	Yes	Yes
The Cathedral	2000	No	Yes	Yes
Tarpon Hole	2000	No	Yes	Yes
Marie Celeste (Wreck)	2000	No	Yes	Yes
North Carolina (Wreck)	2000	No	Yes	Yes
Airplane (Wreck)	2000	No	Yes	Yes
Blanche King (Wreck)	2000	No	Yes	Yes
Darlington (Wreck)	2000	No	Yes	Yes
L'Herminie (Wreck)	2000	No	Yes	Yes
Lartington (Wreck)	2000	No	Yes	Yes
Montana (Wreck)	2000	No	Yes	Yes
Snake Pit	2000	No	Yes	Yes
Hog Breaker	2000	No	Yes	Yes
Caraquet (Wreck)	2000	No	Yes	Yes
Madiana (Wreck)	2000	No	Yes	Yes

Source: Department of Environmental Protection

Map 8.1

Marine Protected Areas, 2015



Source: Department of Planning

Table 8.4

Quantity of Fish Landings by Type, 2011 - 2015

Species Group	2011	2012	2013	2014	(mT) 2015
Groupers	44.47	74.09	75.65	77.44	70.77
Jacks and related species	49.28	77.04	71.76	55.82	58.42
Snappers	33.52	39.13	46.23	39.46	39.73
Tuna and pelagic	239.73	187.89	140.97	122.52	136.36
Sharks	5.71	6.40	5.00	4.43	3.88
Miscellaneous	28.63	36.91	44.20	33.91	23.97
Total	**401.34**	**421.46**	**383.81**	**333.58**	**333.13**
Bait	35.97	41.84	39.96	31.52	31.47
Total including bait	**437.31**	**463.30**	**423.77**	**365.10**	**364.60**
Shellfish[1]	45.26	46.58	33.65	43.13	37.69
Total including bait & shellfish	**482.57**	**509.88**	**457.42**	**408.23**	**402.29**
Percentage change (%)	**+23.30**	**+5.66**	**-10.29**	**-10.75**	**-1.46**

Source: Department of Environmental Protection, Marine Resources Division

[1] Shellfish includes spiny lobster. Size of fish is not measured.

Table 8.5

Total Catch by Hours at Sea, Average Catch of Fishing Area and Number of Registered Fishermen, 2011 - 2015

Indicators	2011	2012	2013	2014	2015
Total catch[1] (mT)	**482.57**	**509.88**	**457.42**	**408.23**	**402.29**
Percentage change (%)	+23.30	+5.66	-10.29	-10.75	-1.46
Average catch of fishing area[2] (mT per km^2)	0.11	0.12	0.11	0.10	0.09
Total hours at sea	**83,616**	**85,729**	**84,106**	**76,335**	**77,112**
Percentage change (%)	+22.02	+2.53	-1.89	-9.24	+1.02
Hours at sea per vessel	475	429	438	474	421
Percentage change (%)	+22.74	-9.68	+2.10	+8.22	-11.18
Registered fishermen	305	356	315	293	300
Percentage change (%)	—	+16.72	-11.52	-6.98	+2.39

Source: Department of Environmental Protection, Marine Resources Division

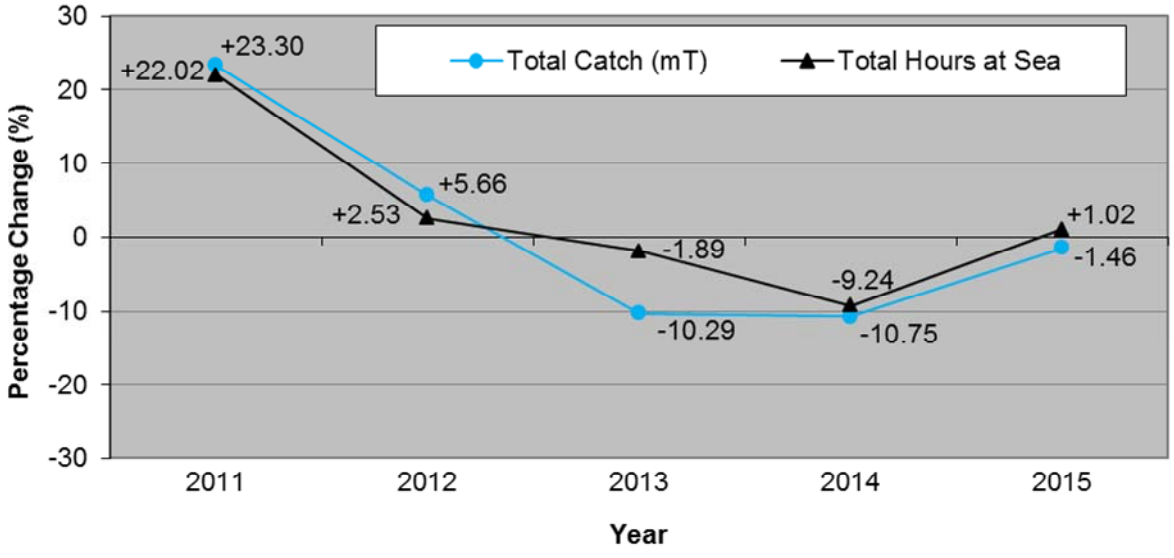
[1] Total catch include fish landings in addition to bait and lobster catches.

[2] Total fishing area is estimated as 4,236.11 km^2 (Department of Planning, see Table 8.1). Fishing area includes the fisheries seasonal protected areas (153.36 km^2) which are closed between May 1st and August 31st.

Computation: Average catch of fishing area = Total catch (mT) / Total estimated fishing area of 4,236.11 km^2

Chart 8.2

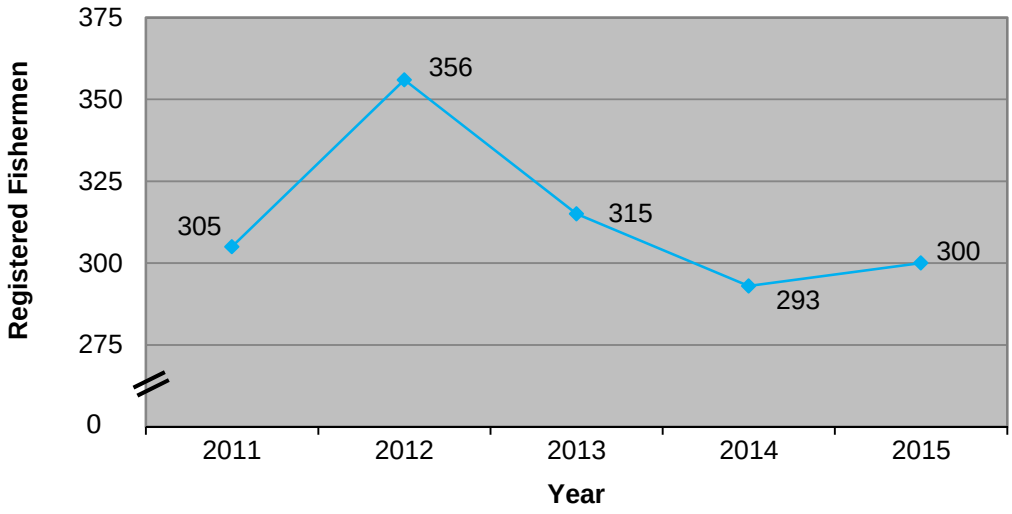
Growth in Total Catch and Total Hours at Sea, 2011 - 2015



Source: Department of Environmental Protection, Marine Resources Division

Chart 8.3

Number of Registered Fishermen, 2011 - 2015



Source: Department of Environmental Protection, Marine Resources Division

Table 8.6

Number of Households and Population of Coastal Areas for Census Years 1980, 1991, 2000 and 2010

	Census Years			
Indicators	**1980**	**1991**	**2000**	**2010**
Number of households in coastal areas	18,449	22,430	25,148	26,923
Ten-year growth rate (%)	..	+21.60	+12.10	+7.10
Population in coastal areas [1]	54,050	58,460	62,059	64,237
Ten-year growth rate (%)	..	+8.16	+6.16	+3.50

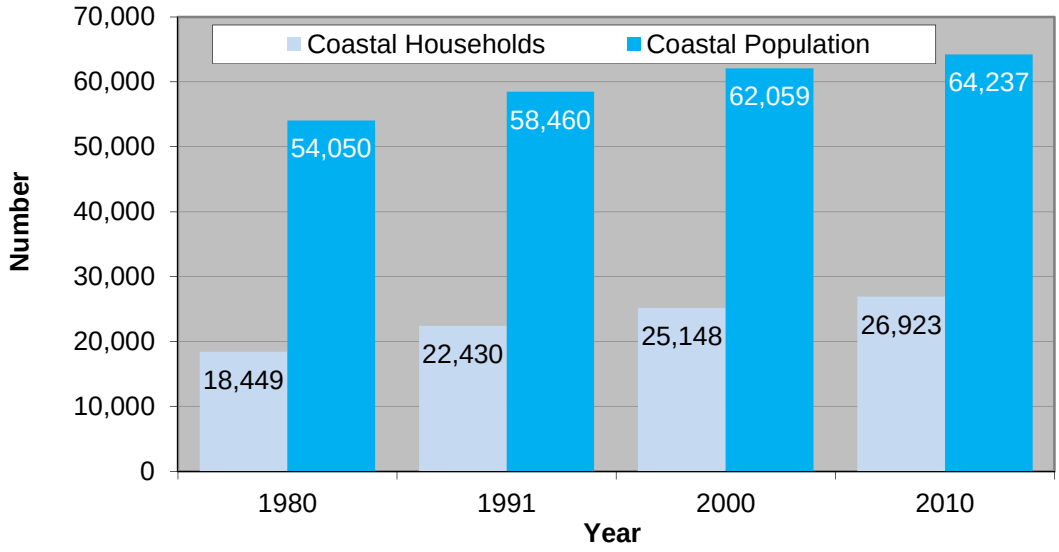
Source: 1980 - 2010 Census of Population and Housing

Bermuda measures 1 mile at its widest point. Based on the standard definition of coastal area, the entire island will be considered coastal.

[1] Does not include the non-sheltered and institutionalized populations.

Chart 8.4

Number of Households and Population of Coastal Areas for Census Years 1980, 1991, 2000 and 2010



Source: 1980 - 2010 Census of Population and Housing

SECTION 9

BIODIVERSITY

The Biodiversity Section contains information on the protected land areas in Bermuda such as; protected coastal reserves, protected open space, historical cove areas and parks.

Protected Area: Land and Water

• Bermuda's protected area, inclusive of land and water, totals 319.66 km^2. This represents 7.45 percent of the total area (6.87% water and 0.58% land) (Table 9.1).

• As a proportion of the total land area (54.35 km^2), protected land area represents 45.85 percent or 24.92 km^2. Protected water area represents 6.96 percent of 294.74 km^2 of the total water area (Table 9.1).

NOTE TO READER

Biodiversity: the range of genetic differences, species differences, and ecosystem differences in a given area.

Protected Area: legally established land or water area under either public or private ownership that is regulated and managed to achieve specific conservation objectives. A protected area, as adopted by the International Union for Conservation of Nature (IUCN), is defined as an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, natural and associated cultural resources and managed through legal or other effective means. It includes seven (7) categories which are:

Category Ia: Strict Nature Reserve

Category Ib: Wilderness Area

Category II: National Park

Category III: National Monument

Category IV: Habitat/Species Management Area

Category V: Protected Landscape/Seascape

Category VI: Managed Resource Protected Area

Total Area: Total area (of country) including area under inland water bodies, but excluding off-shore territorial waters (= total land area + water).

Land Area: is the total surface area of the country less that area covered by inland waters.

Source: CARICOM Environment Programme

Table 9.1

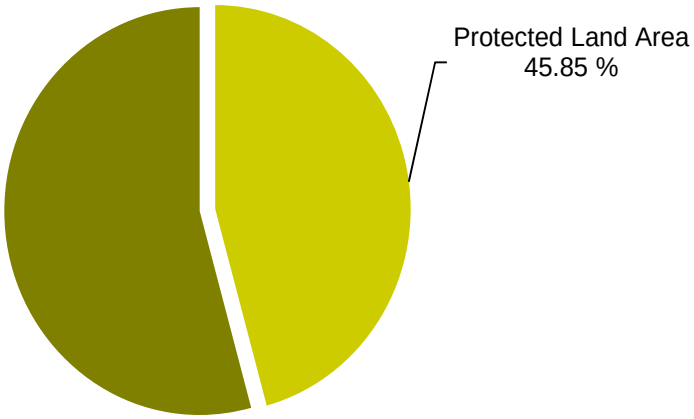
Protected Areas, 2015

Category	
Total area (km^2)	4,290.46
Total land area (low tide mark) (km^2)	54.35
Total water area (km^2)	4,236.11
Protected land area (km^2)	24.92
Protected land area as a % of total land area	45.85
Protected land area as a % of total area	0.58
Protected water area (km^2)	294.74
Protected water area as a % of total water area	6.96
Protected water area as a % of total area	6.87
Total protected area (land and water) (km^2)	319.66
Total protected area as a % of total area	7.45

Source: Department of Planning

Chart 9.1

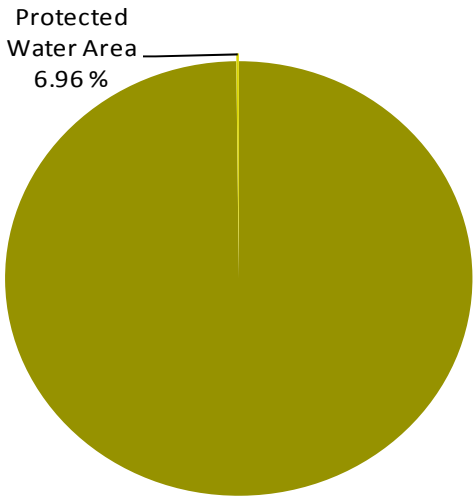
Protected Land Area as a Percentage of Total Land Area, 2015



Source: Department of Planning

Chart 9.2

Protected Water Area as a Percentage of Total Water Area, 2015



Source: Department of Planning

Table 9.2

Protected Areas by Category and Area, 2015

Protected Area Category	Acres	km^2
Conservation base zones		
Open space reserve	1,298.10	5.25
Coastal reserve	823.29	3.33
Nature reserve	770.09	3.12
Park	884.57	3.58
Recreation	963.92	3.90
Sub-total	**4,739.97**	**19.18**
Conservation areas		
Agricultural reserve	731.59	2.96
Woodland reserve	983.94	3.98
Sub-total	**1,715.53**	**6.94**
Cave protection area	**1,107.20**	**4.48**
Historic protection area	**201.05**	**0.81**
Conservation base zone and conservation areas (no overlap)[1]	**6,156.79**	**24.92**
Overlapping area	**1,670.11**	**6.76**
Total terrestrial area (low tide mark) Total land area	**13,430.39**	**54.35**
Water resources protection area[2]	**4,000.61**	**16.19**

Source: Bermuda Plan 2008, Department of Planning, Bermuda

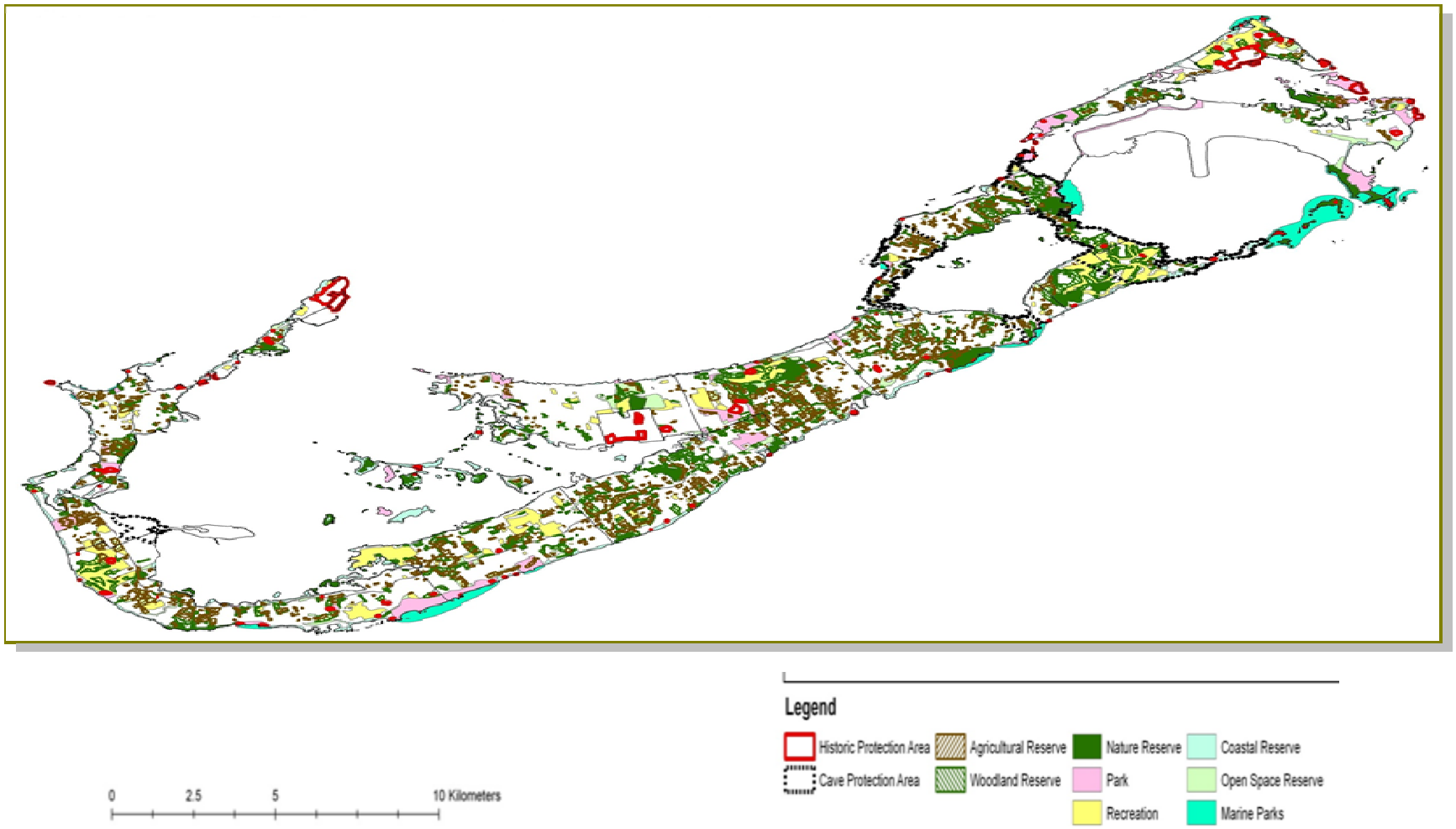
[1] Total protected area does not equal to the sum of the sub-totals as it excludes any overlapping areas (6.77km^2) to avoid double counting.

[2] The Water Resources Protection Area is not considered as a "protected area" and hence has not been included in the 24.92 km^2 of protected area but is contained in the total terrestrial area of 54.35 km^2.

Note: 1 km^2 = 247.11 acres

Map 9.1

Terrestrial Protection Areas Including Marine Parks, 2015



Source: Department of Planning

Millennium Development Goal 7
Indicator 26
Ratio of area protected to maintain biological diversity to surface area
7.45%

Nationally protected areas, both terrestrial and marine, are totaled and expressed as a percentage of the total surface area of the country. The total surface area if the country includes terrestrial area plus any territorial sea area (up to 12 nautical miles).

SECTION 10

FORESTRY

The Forestry Section of the Environmental Statistics Compendium includes a table and chart with information on forest area in Bermuda.

Forestry

• In 2015 Bermuda's total forest area was 4.16 km^2. This represents 7.65% of Bermuda's total land area and is inclusive of woodland reserves (Table 10.1).

NOTE TO READER

Forest: land under forestry or no land use, spanning more than 0.005 km^2 (0.5 hectares); with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. Please include mangroves and forests on wetlands according to the above height and canopy coverage.

Protected Area: a protected area, as adopted by the International Union for Conservation of Nature (IUCN), is defined as an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, natural and associated cultural resources and managed through legal or other effective means.

Total Area: total area (of country) including area under inland water bodies, but excluding offshore territorial waters (= total land area + water).

Land Area: is the land area excluding area under inland or tidal water bodies.

Source: CARICOM Environment Program

Table 10.1

Protected Forest Area as a Percentage of Total Land Area, 2015

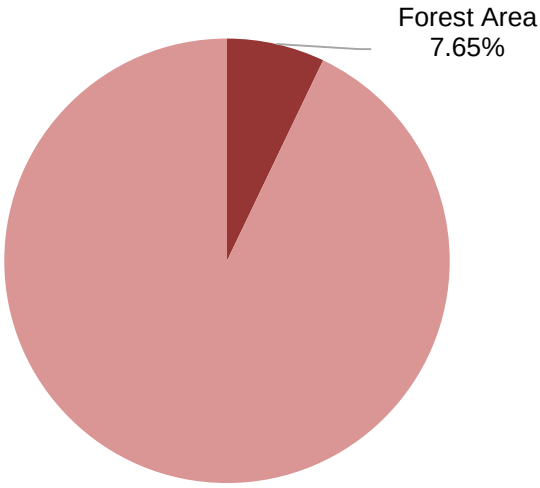
Protected Area Category	Area km^2
Total forest area	4.16 *
Total land area	54.35
Protected forest area as a % of total forest area	100.00
Protected forest area as a % of total land area	7.65

Source: Department of Planning

* This includes woodland reserves.

Chart 10.1

Protected Forest Area as a Percentage of Total Land Area, 2015



Source: Department of Planning

SECTION 11

AIR

The air quality in Bermuda is a valued part of its natural resources.

Air Emissions

• In 2015, the highest concentrated pollutant of air emissions from Tynes Bay waste to energy incinerator was NO_2 (259.30 mg/Nm^3) (Table 11.1).

Air Concentrations

• Bermuda contains five ambient air monitoring sites that are located across the island (Table 11.2).

• The 24-hour average concentration for the air monitoring sites recorded pollutant concentration levels below Bermuda's limit, except for the pollutant PM_{10} which exceeded Bermuda's limit across every air monitoring site (Table 11.3).

Table 11.1

Annual Air Emissions from Tynes Bay Waste to Energy Incinerator, 2011 - 2015

Pollutant	2011	2012	2013	2014	2015*
VOCs (mg/Nm^3)	0.26	2.35	2.32	0.41	0.25
NO_2 (mg/Nm^3)	316.20	299.50	253.20	258.10	259.30
SO_2 (mg/Nm^3)	28.10	36.80	38.50	29.00	52.60
Lead (mg/Nm^3)	0.01	0.02	0.02	—	0.09
Particulate Matter (mg/Nm^3)	1.30	1.98	1.88	2.48	11.86

Source: Department of Environmental Protection

Note: The data is captured through isokinetic sampling over a three day period.

* One field of the 3-field Electrostatic Precipitator exhaust abatement system was down during testing.

Table 11.2

Average Concentrations for Ambient Air Monitoring Sites, 2013 - 2015

	Pollutants	Units	Bermuda Limit (Clean Air Regulations 1993)	2013						2014						2015					
				Prospect	East Broadway	Belco Site (Government)	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS	Prospect	East Broadway	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS	Prospect	East Broadway	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS
Hourly	NO_2	$\mu g/m^3$	**400**	3.20	-	-	14.30	6.20	-	9.60	-	20.50	9.80	-	26.60	14.91	17.53	5.99	-
	SO_2	$\mu g/m^3$	**450**	1.20	-	-	2.10	8.30	-	0.70	-	6.30	16.70	-	7.11	10.79	13.24	17.20	-
	PM_{10}	$\mu g/m^3$	**-**	-	-	-	-	-	-	-	-	-	-	-	-	29.20	-	-	-
	$PM_{2.5}$	$\mu g/m^3$	**-**	10.30	-	-	-	-	-	18.30	-	-	-	-	7.80	-	-	-	-
	TSP	$\mu g/m^3$	**-**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Hour	NO_2	$\mu g/m^3$	**200**	3.10	-	-	14.30	6.20	-	6.90	-	20.50	9.80	-	26.60	14.91	18.10	6.10	-
	SO_2	$\mu g/m^3$	**150**	1.10	-	-	2.10	8.30	-	0.80	-	6.30	16.70	-	6.84	10.53	13.20	17.20	-
	PM_{10}	$\mu g/m^3$	**50**	13.90	23.90	-	15.10	13.10	15.40	13.80	22.10	13.70	12.10	16.60	22.30	28.80	15.00	23.50	18.40
	$PM_{2.5}$	$\mu g/m^3$	**-**	10.20	-	-	-	-	-	18.10	-	-	-	-	7.70	-	-	-	-
	TSP	$\mu g/m^3$	**100**	22.40	36.90	42.10	22.50	21.40	32.80	14.40	32.40	20.10	17.40	-	21.20	32.20	29.40	24.20	-
1-year	NO_2	$\mu g/m^3$	**60**	3.10	-	-	14.30	6.20	-	7.00	-	20.50	9.80	-	28.30	20.19	18.10	6.10	-
	SO_2	$\mu g/m^3$	**30**	1.40	-	-	2.10	8.30	-	0.90	-	6.30	16.70	-	6.84	11.05	13.20	17.20	-
	PM_{10}	$\mu g/m^3$	**30**	11.30	22.50	-	15.10	13.10	13.50	11.90	21.40	13.70	12.10	14.40	18.50	24.30	15.00	23.50	16.00
	$PM_{2.5}$	$\mu g/m^3$	**-**	10.30	-	-	-	-	-	17.80	-	-	-	-	7.00	-	-	-	-
	TSP	$\mu g/m^3$	**60**	18.60	35.10	37.20	22.50	21.40	31.60	13.00	30.80	20.10	17.40	-	19.10	31.00	29.40	24.20	-

Source: Department of Environmental Protection

- Not Required or Not determined as part of the current protocols

BELCO site (Government) was removed in 2014.

Table 11.3

Maximum Concentrations for Ambient Air Monitoring Sites, 2013 - 2015

	Pollutants			2013						2014					2015				
				Prospect	East Broadway	Belco Site (Government)	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS	Prospect	East Broadway	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS	Prospect	East Broadway	Cemetry Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS
Hourly	NO_2	µg/m^3	**400**	33.50	-	-	225.00	102.00	-	115.60	-	385.00	201.00	-	319.25	73.21	354.30	137.00	-
	SO_2	µg/m^3	**450**	34.90	-	-	62.00	256.00	-	31.90	-	94.00	358.00	-	91.32	108.68	385.30	320.70	-
	PM_{10}	µg/m^3	**-**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	$PM_{2.5}$	µg/m^3	**-**	91.50	-	-	-	-	-	221.00	-	-	-	-	316.60	-	-	-	-
	TSP	µg/m^3	**-**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Hour	NO_2	µg/m^3	**200**	12.60	-	-	104.00	67.00	-	18.40	-	192.00	58.00	-	160.19	42.83	149.50	61.00	-
	SO_2	µg/m^3	**150**	9.10	-	-	20.00	127.00	-	9.60	-	48.00	61.00	-	27.11	60.53	136.00	103.00	-
	PM_{10}	µg/m^3	**50**	33.00	47.30	-	42.80	44.90	33.40	35.30	39.80	48.30	43.20	40.10	113.80	77.00	55.00	91.60	53.10
	$PM_{2.5}$	µg/m^3	**-**	27.10	-	-	-	-	-	38.30	-	-	-	-	26.80	-	-	-	-
	TSP	µg/m^3	**100**	68.50	79.60	70.30	63.90	56.50	79.00	39.90	57.70	55.30	48.70		43.70	56.10	96.10	59.30	-
Total number of exceedances of the limits set in the Clean Air Regulations 1993 over each year				0	0	0	0	0	0	0	0	0	0	0	1	10	2	17 *	1

Source: Department of Environmental Protection

- Not determined as part of the current protocols

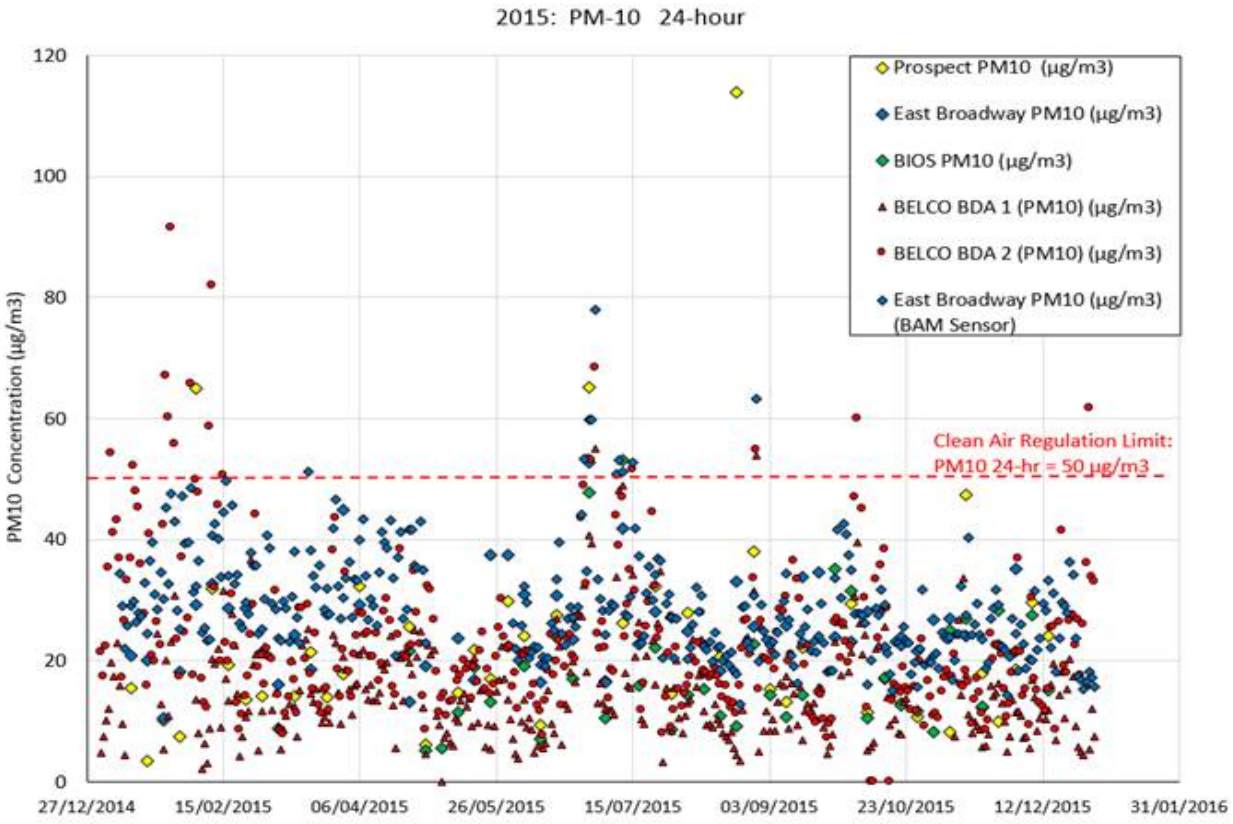
Note: Amounts in red show that the limit according to the 1993 Clean Air Regulation was exceeded.

BELCO site (Government) was removed in 2014.

* 10 of the 17 exceedances occurred before calibration highlighted a problem with the instruments.

Figure 11.1

24-hour Average PM_{10} Concentration, 2015



Source: Department of Environmental Protection

SECTION 12

WASTE

The Waste Section comprises of information regarding the generation and disposal of solid waste in Bermuda.

• In 2015, the amount of municipal waste collected totaled 83.59 tonnes. This represents a decrease of 1.90% from the 85.21 tonnes collected in 2014 (Table 12.1).

• In 2015, it is estimated that 1.60 tonnes of municiple waste was recycled, 18.00 tonnes was composted, 53.99 tonnes was incinerated to generate electricity, while 10.00 tonnes was land-filled (Table 12.2).

• There were 123 container loads of materials recycled in 2015. Sixteen container loads of special waste items were processed and exported for the United States recycling market (Chart 12.1).

• Bermuda exported about 669 tonnes of hazardous waste in 2015 (Table 12.3).

NOTE TO READER

Household Waste: this is waste that comes from a private dwelling, being a dwelling that is not considered as commercial premises; or waste from premises operated by a charity registered under the Charities Act 1978.

Waste: this is any article or substance (including scrap metal or other surplus arising from the application of a process) which is not liquid and either requires to be disposed of as being unwanted, broken, worn out, contaminated or otherwise spoilt or useless, or in relation to a particular person, has been discarded by.

These definitions are taken from the Waste and Litter Control Act, 1987

Table 12.1

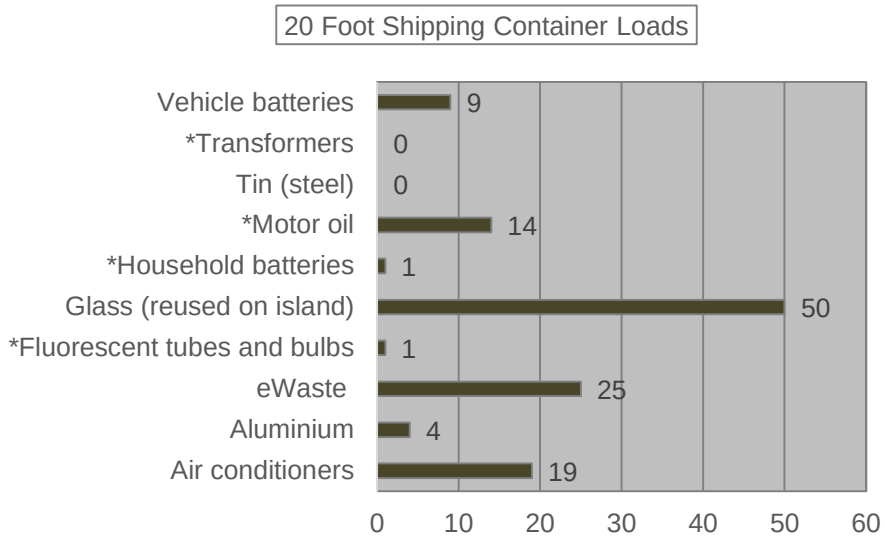
Generation of Waste by Source, 2011 - 2015

Indicator	2011	2012	2013	2014	(1,000t) 2015
Municipal waste collected from households	27.00	27.35	28.21	28.40	27.86
Municipal waste collected from other origins	54.01	54.71	56.43	56.81	55.73
Total amount of municipal waste collected	**81.01**	**82.06**	**84.64**	**85.21**	**83.59**
Percentage change (%)	**-9.71**	**+1.30**	**+3.14**	**+0.67**	**+1.90**

Source: Department of Works and Engineering - Waste and Enforcement Section

Chart 12.1

Generation of Recyclable Waste, 2015



Source: Department of Works and Engineering - Waste and Enforcement Section

Note: * = Special Waste Items processed for the US recycling market

Table 12.2

Management of Municipal Waste, 2011 - 2015

(1,000t)

Indicator	2011	2012	2013	2014	2015 [1]
Amounts going to:					
Recycling	1.60 [1]	1.60 [1]	1.60 [1]	1.60 [1]	1.60
Composting	15.00 [1]	15.00 [1]	15.00 [1]	18.00 [1]	18.00
Incineration	54.41	55.46	58.04	55.61	53.99
Landfilling	10.00 [1]	10.00 [1]	10.00 [1]	10.00 [1]	10.00
Total amount of municipal waste	**81.01**	**82.06**	**84.64**	**85.21**	**83.59**

Source: Department of Works and Engineering - Waste and Enforcement Section

[1] Estimated data.

Table 12.3

Management of Special Waste, 2011 - 2015

(1,000 lbs)

Indicator	2011	2012	2013	2014	2015 [1]
Stock of hazardous waste at the beginning of the year	109.00	98.00	92.00	115.00	88.00
Hazardous waste generated during the year	590.00	570.00	566.00	588.00	601.50
Hazardous waste exported during the year:					
Recycling	352.00	362.00	356.00	376.00	400.80
Incineration	7.00	5.00	8.00	5.00	6.60
Landfilling	242.00	209.00	179.00	234.00	261.50
Total	**601.00**	**576.00**	**543.00**	**615.00**	**668.90**
Stock of hazardous waste at the end of the year	98.00	92.00	115.00	88.00	20.70

Source: Department of Works and Engineering - Waste and Enforcement Section

[1] Estimated data.

Table 12.4

Management of Municipal Waste by Type, 2008, 2010, 2012 and 2014

(%)

Indicator	2008	2010	2012*	2014*
Paper, paperboard	29.00	29.00	..	..
Textiles	6.00	17.00	..	..
Plastics	17.00	13.00	..	..
Glass	11.00	9.00	..	..
Metals	5.00	6.00	..	..
Other inorganic material	9.00	9.00	..	..
Organic material	23.00	17.00	..	..
Total (%)	**100.00**	**100.00**	**..**	**..**

Source: Department of Works and Engineering - Waste and Enforcement Section

Beginning in 2006, the Waste Management Section of the Ministry of Public Works began conducting a municipal waste audit every two years.

* A waste audit has not been conducted.

SECTION 13

WATER

Water is an essential ingredient for all life and is used in the production of almost all goods. It is therefore, vital to monitor the state of water resources and to ensure sustainable use of this important commodity.

• In 2015, the total volume of precipitation in Bermuda was 78.36 mio m^3/y (Table 13.1).

NOTE TO READER

Precipitation: total volume of atmospheric wet precipitation (rain, dew, etc.) falling on the territory of the country over one year.

Actual evapotranspiration: total actual volume of evaporation from the ground, wetlands, natural water bodies and transpiration of plants.

Internal flow: total volume of river run-off and groundwater generated over the period of a year, in natural conditions, exclusively by precipitation into a territory. It is equal to the precipitation less actual evapotranspiration.

Renewable freshwater resources: equal internal flow plus any inflow of surface and groundwaters.

Regular freshwater resources 95.00% of the time: a portion of the total freshwater resource that can be depended on for annual water development during 19 out of 20 consecutive years, or at least 95.00% of the years included in longer consecutive periods. This item yields information about the average annual long-term availability of freshwater for use in human activities.

Sources: United Nations Statistics Division (UNSD) and United Nations Environment Programme (UNEP)

Table 13.1

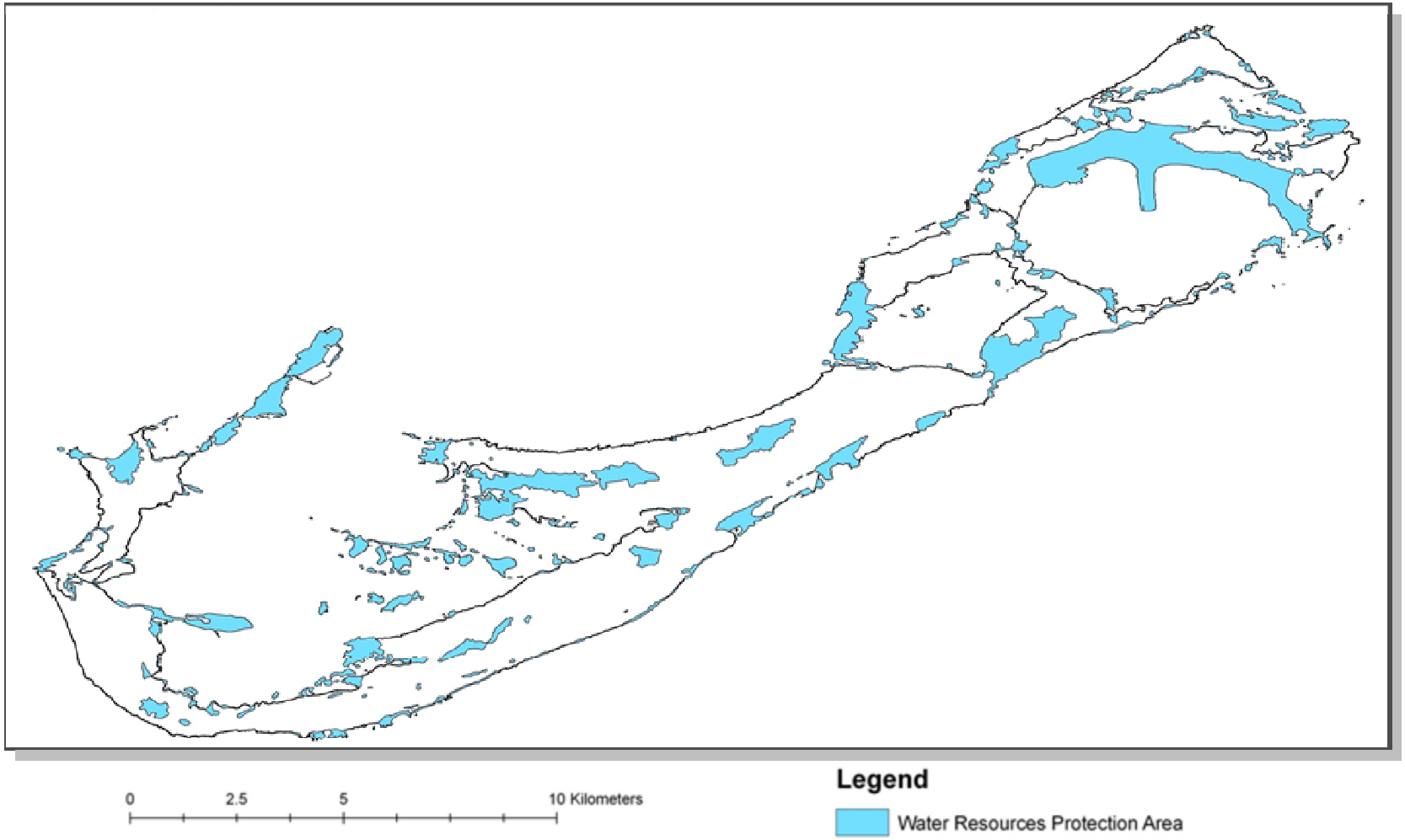
Renewable Freshwater Resources, 2011 - 2015

Category	2011	2012	2013	2014	2015
					mio m^3/y
Precipitation	56.00	68.01	85.19	94.19	78.36
Actual evapotranspiration	..	..	..	..	..
Internal flow	..	..	..	..	..
Renewable freshwater resources	..	..	..	..	..
Regular freshwater resources 95.00% of the time	..	..	..	..	..

Source: Department of Environmental Protection

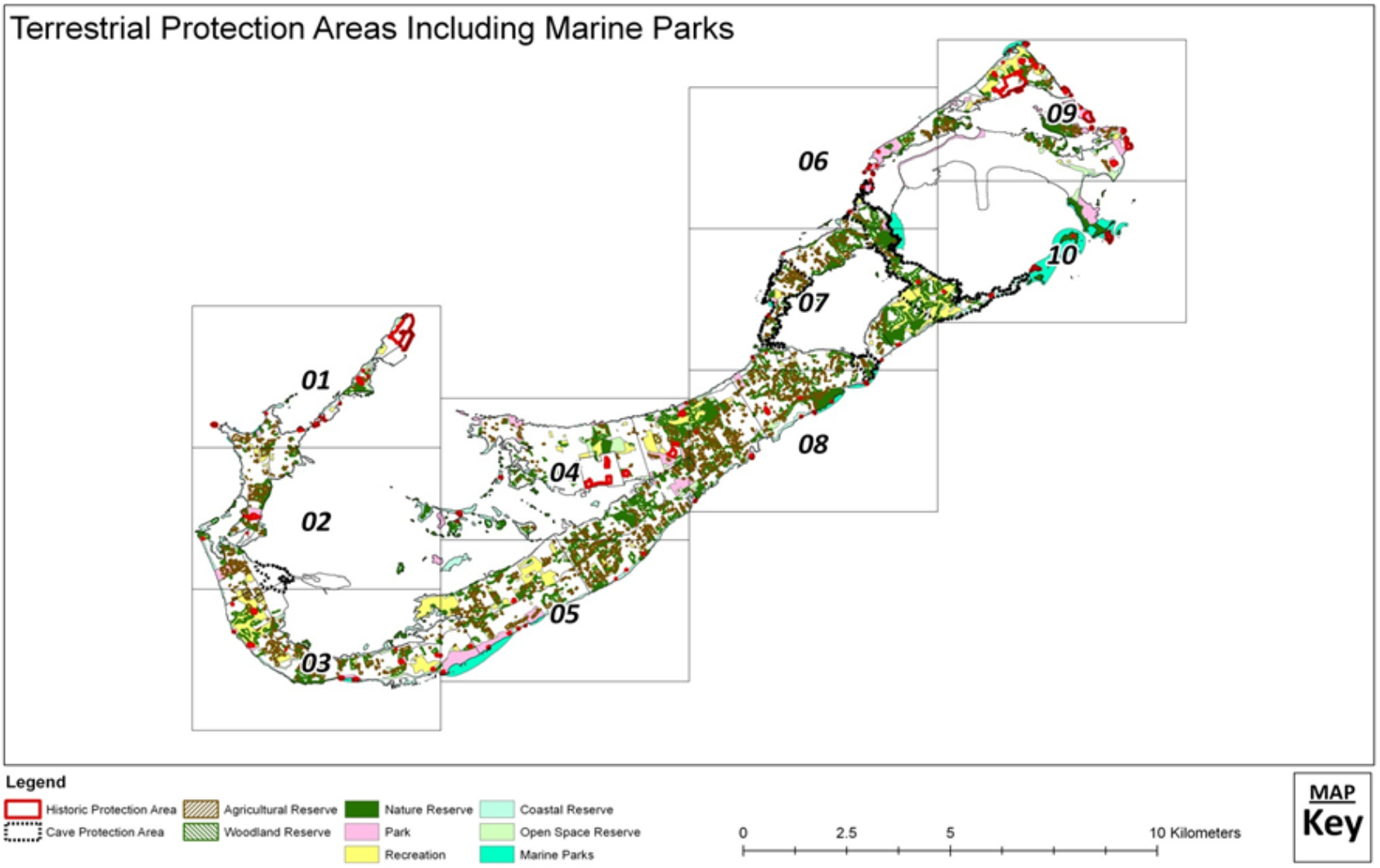
Map 13.1

Water Resources Protection Areas, 2015



Source: Department of Planning

ANNEX



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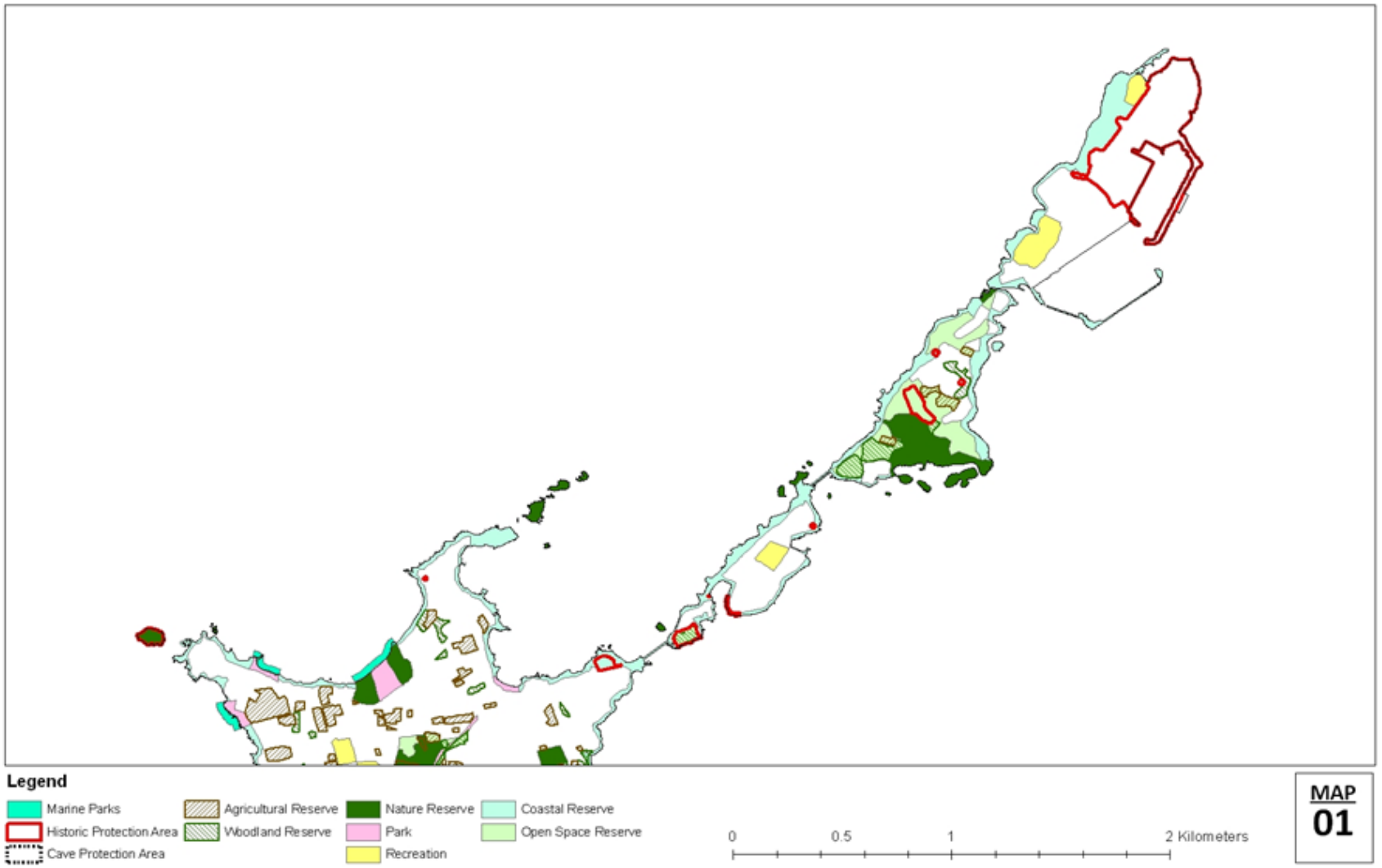
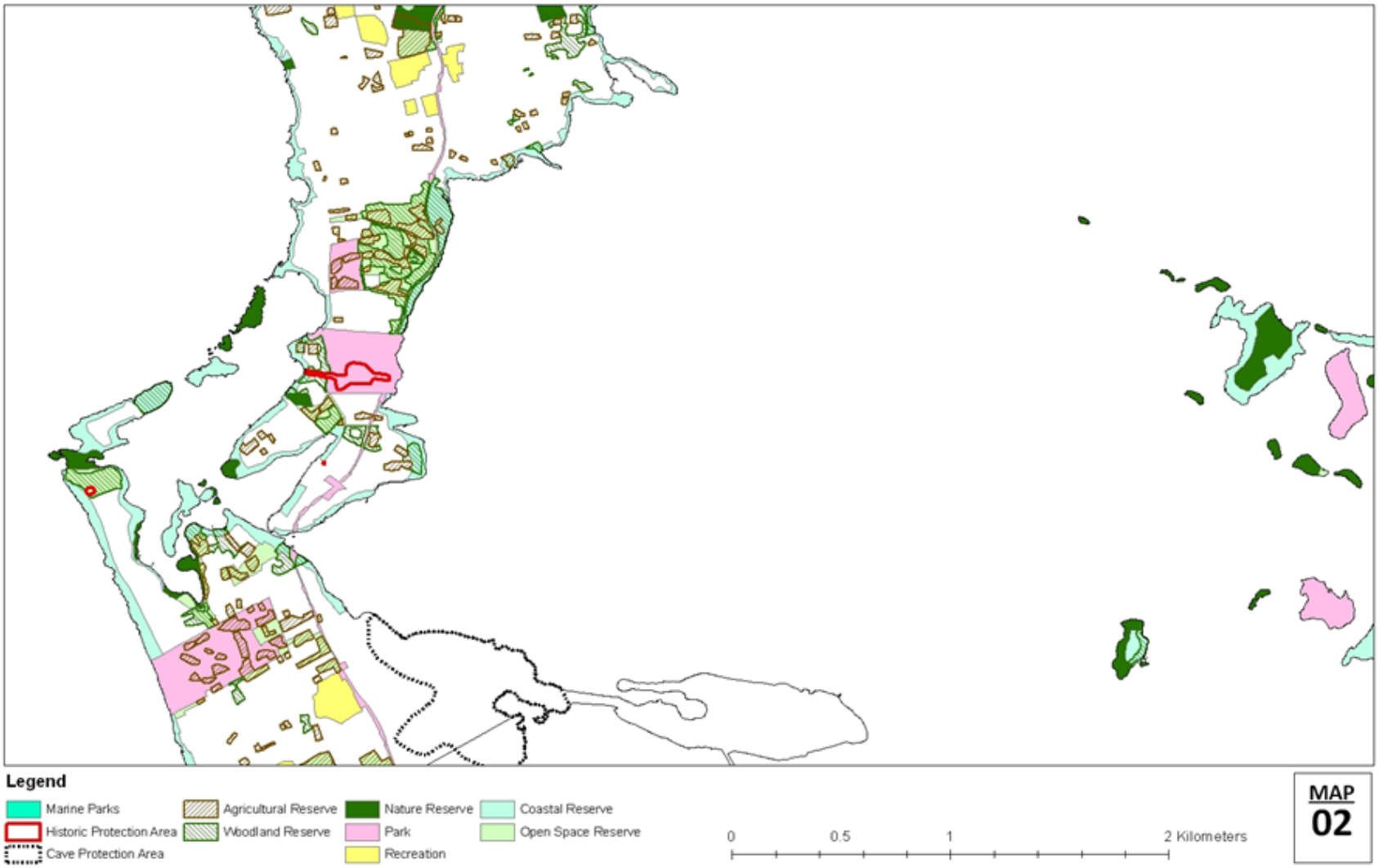


Source: Department of Planning



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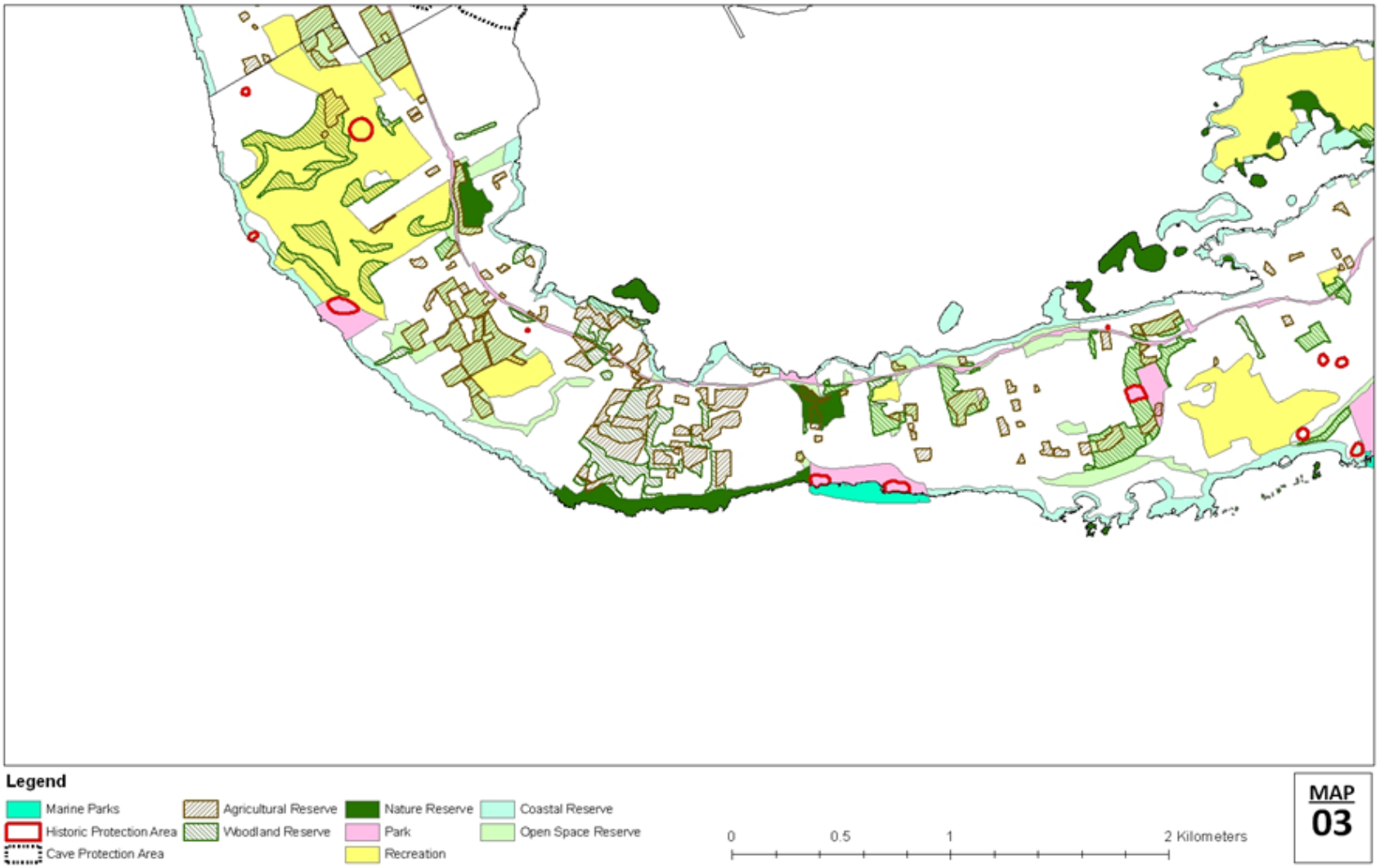
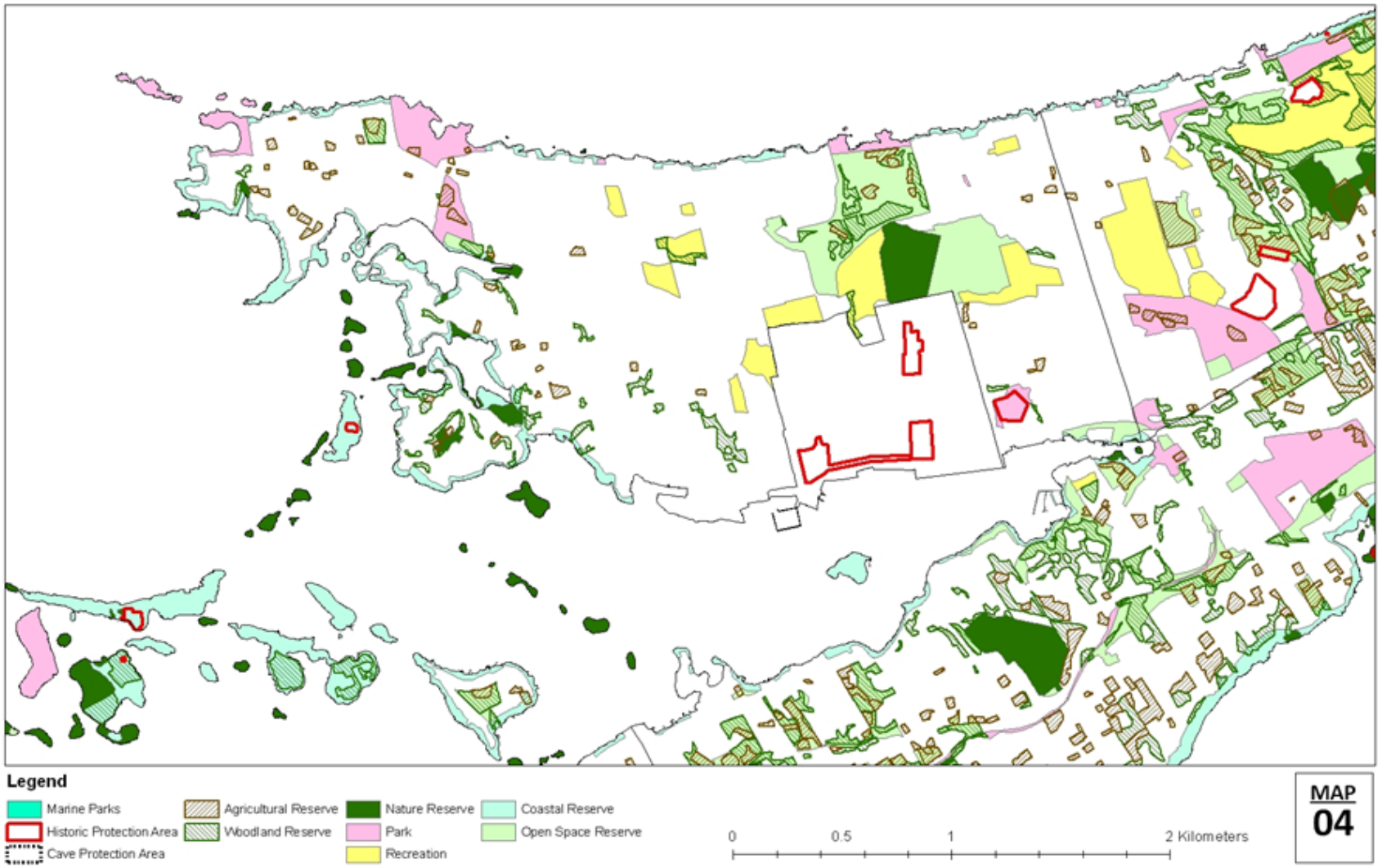


Source: Department of Planning



Source: Department of Planning

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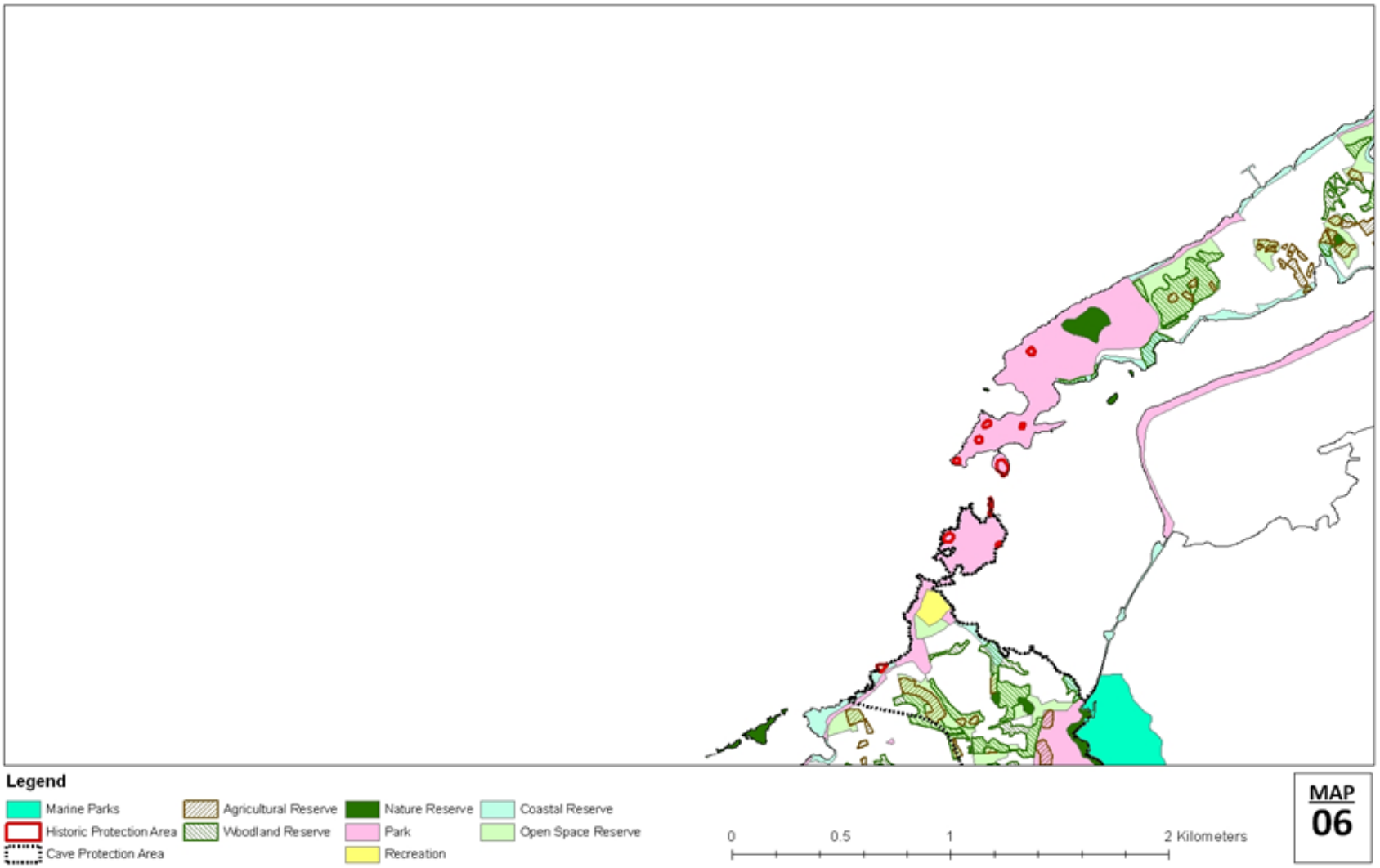
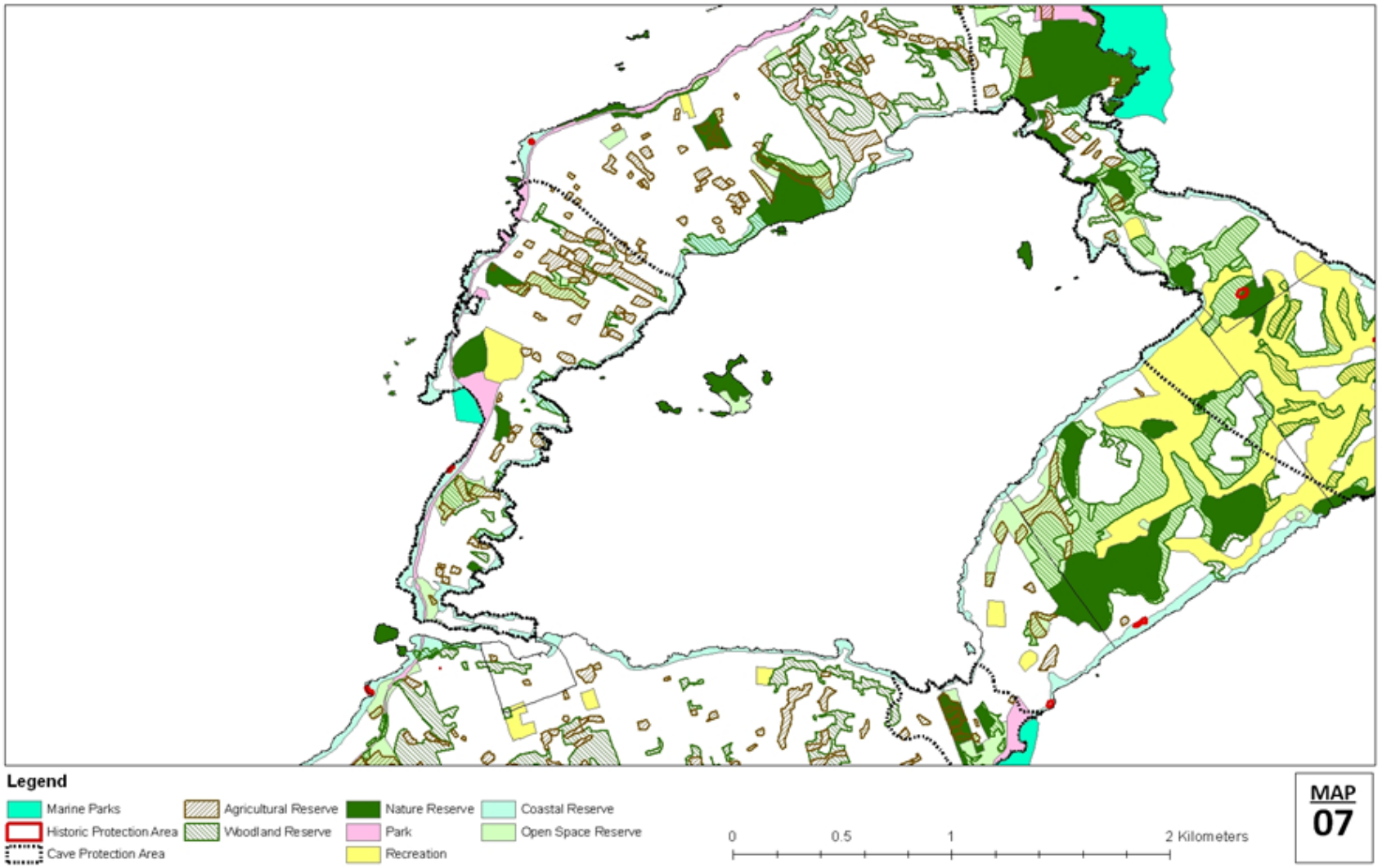


Source: Department of Planning



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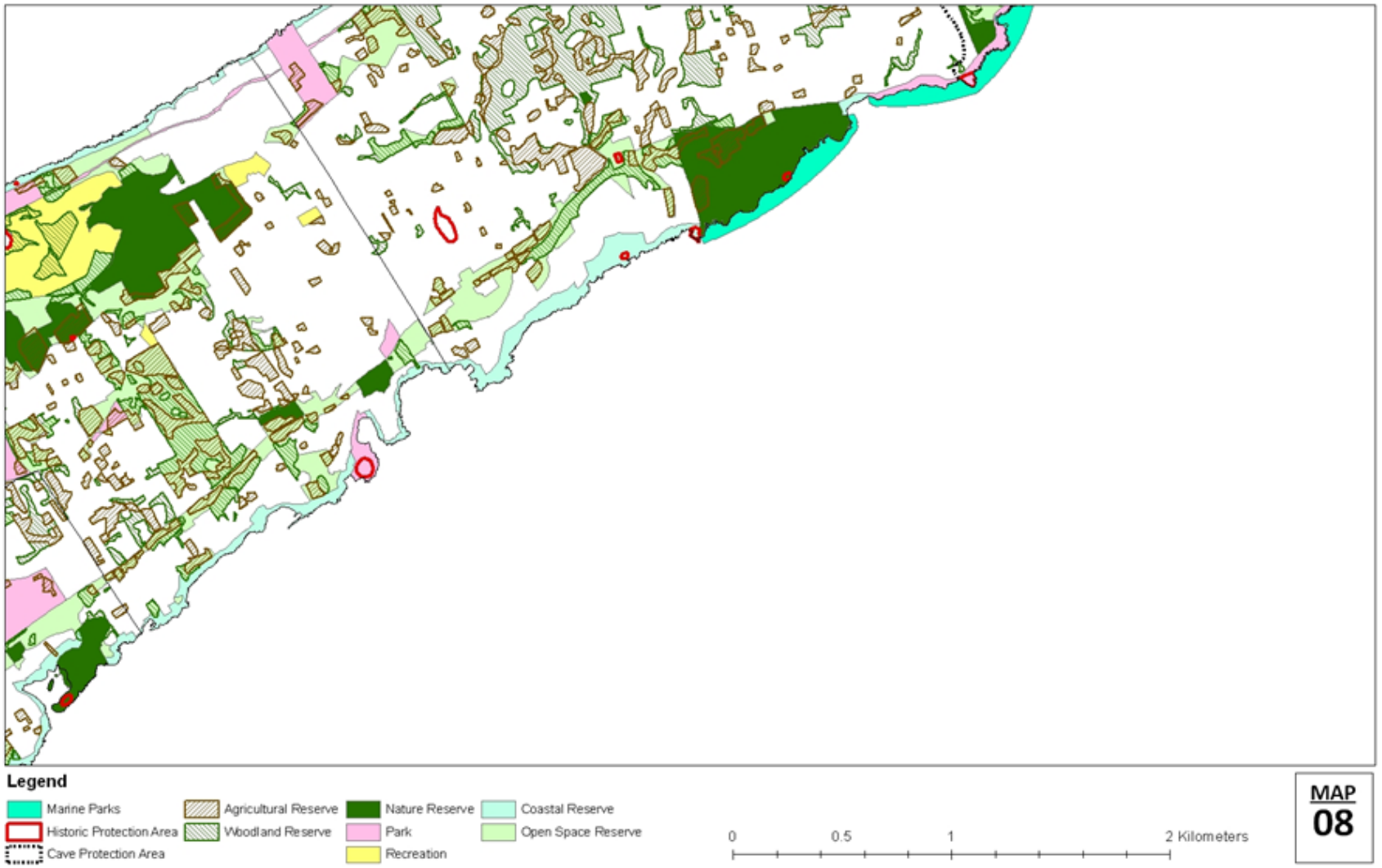

Source: Department of Planning

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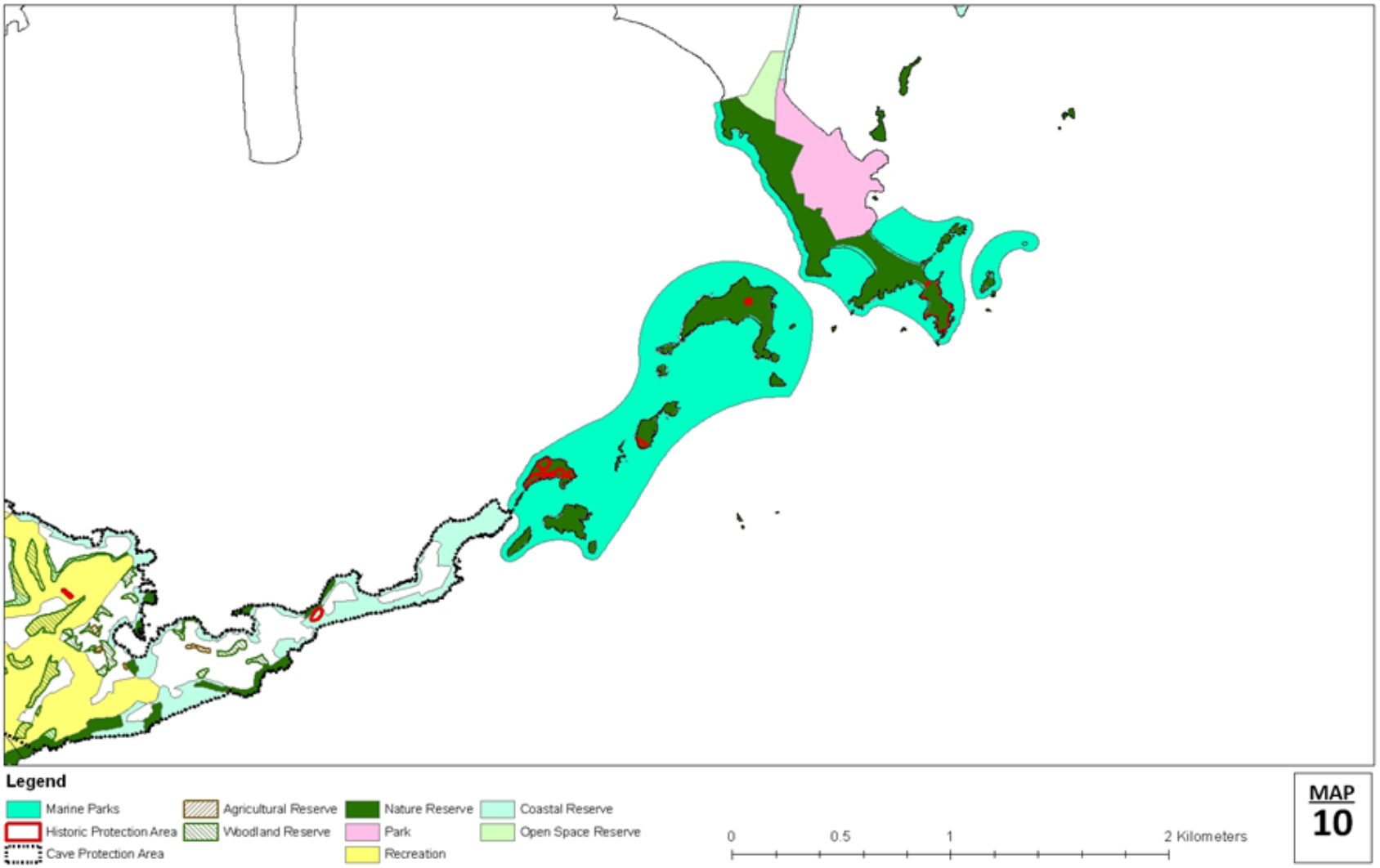

Source: Department of Planning

GOVERNMENT OF BERMUDA
The Cabinet Office

Department of Statistics

Cedar Park Centre
48 Cedar Avenue, Hamilton HM 11
Fax: (441) 295-8390 * Tel: (441) 297-7761
E-mail: statistics@gov.bm
Website: www.gov.bm

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