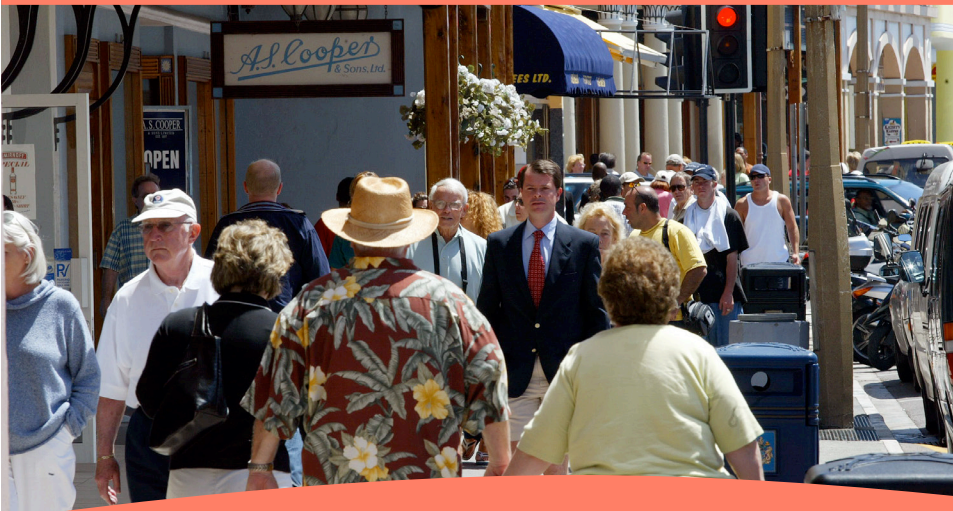


2017

ENVIRONMENTAL STATISTICS COMPENDIUM



GOVERNMENT OF BERMUDA
Department of Statistics

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FOREWORD

The Department of Statistics is pleased to release its eighth 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 along with 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 2012 to 2016.

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

November 2017

EXPLANATORY NOTES

-	Not applicable	km ²	Square kilometer
..	Not available	kWh	Kilowatt-hour
r	Revised figure	mio m ³ /y	Million cubic meters per year
e	Estimated figure	mT	Metric tonnes
—	Nil or negligible	No.	Number
'000	Thousands	µg/m ³	Microgram
°	Degrees	NO ₂	Nitrogen Dioxide
%	Percent	SO ₂	Sulfur Dioxide
\$	Bermuda dollar	ppb	Parts per billion
F	Fahrenheit	TSP	Total Suspended Particles
ha	Hectare	PM ₁₀ /PM _{2.5}	Fine Particulate Matter
kg	Kilograms	mg/nm ³	Milligrams per cubic meter
km	Kilometer	≡	Axis scale has a discontinuity

*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)	0.9144 metre (m)
1 metre (m)	100 cm	1.0936 yards (yds)	1 mile	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	4,046.9 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)	2.59 square kilometer(km ²)
MASS				
1 kilogram (kg)	1,000 grams (g)	2.2046 pounds (lbs)	1 pound (lb)	0.4536 kg
1 metric tonne (mT)	1,000 kg	0.9842 ton	1 ton	2,240 lbs
1.016 metric tonne (mT)				1.016 metric tonne (mT)
TEMPERATURE				
1 degree Celsius (°C)		33.8 degrees Fahrenheit (°F)	1 degree Fahrenheit (°F)	-17.2 degrees Celsius (°C)

CONTRIBUTORS

Ascendant Group Limited

Bermuda Fire and Rescue Service

Bermuda Hospital Board

Bermuda Tourism Authority

Department of Environmental and Natural Resources

Department of Health

Department of Planning

Department of Statistics

Department of Works and Engineering - Waste and Enforcement Section

The Bermuda Business Development Agency

The Bermuda Weather Service

Transport Control Department

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 2016, the population of Bermuda was projected to be 61,695 persons, a 0.06 percent decrease from the 61,735 persons projected in 2015 (Table 1.1).
- From 2015 to 2016, 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, 31.49% of the total households in Bermuda were two person households (Table 1.4).
- The average size of a household dropped from 2.47 persons in 2000 to 2.39 persons in 2010 (Table 1.4).
- In 2010, households with two bedrooms accounted for over one-third (35.64%) of households in Bermuda (Table 1.5).
- The average number of persons per bedroom was 1.13 persons in 2010 (Table 1.5).

Table 1.1

Population and Population Density, 2012 - 2016

Year	Population ¹	Population Density (per km ²)
2012	62,408	1,148
2013	61,954	1,140
2014	61,777	1,137
2015	61,735	1,136
2016	61,695	1,135

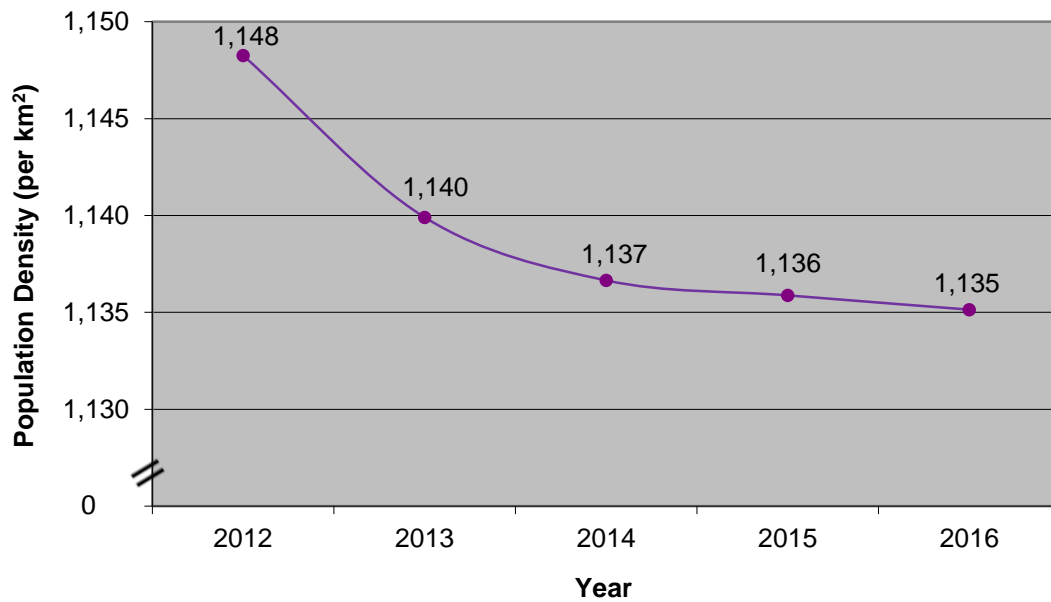
Source: Department of Statistics

¹Based on the Bermuda Population Projections 2010-2020

Note: According to the Department of Planning (2008), Bermuda is 54.35km²

Chart 1.1

Population Density, 2012 - 2016



Source: Department of Statistics

Table 1.2**Number of Households by Type of Dwelling, 2000 and 2010**

Type of Dwelling	2000		2010	
	No.	%	No.	%
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	2.70
Other/not stated	85	0.34	27	0.10
Total	25,148	100.00	26,923²	100.00³

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 minus 1,106).

Table 1.3**Number of Households by Type of Tenure, 2000 and 2010**

Type of Tenure	2000		2010	
	No.	%	No.	%
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	26,923³	100.00⁴

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 minus 1,106).

Table 1.4**Number of Households by Size of Household, 2000 and 2010**

	2000		2010	
	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		2.39 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 minus 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.

Table 1.5**Number of Private Households by Number of Bedrooms, 2000 and 2010**

Number of Bedrooms	2000		2010	
	No.	%	No.	%
Studio dwelling (zero bedrooms)	1,188	4.80	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 ²
Total number of households	24,763	100.00	26,200 r¹	100.00
Average number of bedrooms per household	2.03		2.15³	
Average number of persons per bedroom	1.23		1.13⁴	

Source: 2000 and 2010 Census of Population and Housing

¹ Includes 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 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.

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 2016 increased by 7.56 percent from 597,212 in 2015 to 642,395 in 2016 (Table 2.1).
- Cruise ship arrivals increased 5.30 percent from 2015 to 2016 (Table 2.1).
- In 2016, the average length of stay for air passengers decreased to 5.99 days (Table 2.1).

Visitor Expenditure

- Visitor expenditure increased from \$335.5 million in 2015 to \$398.3 million in 2016 (Table 2.2).
- In 2016, there were 4,127 persons directly employed in the tourism industry; an increase of 2.87% over 2015. Males accounted for 2,480 persons compared to 1,647 females (Table 2.2).

Tourist Properties

- The total number of tourist properties in Bermuda decreased from 43 in 2015 to 42 in 2016 (Table 2.3).
- The total number of rooms available decreased by 1.60% from 2,372 in 2015 to 2,334 in 2016 (Table 2.3).
- There was a decline of 1.78% in the total number of beds from 4,934 in 2015 to 4,846 in 2016 (Table 2.3).
- The occupancy rate increased 5.10 percentage points from 52.60% in 2015 to 57.70% in 2016 (Table 2.3).
- The number of rooms per km² dropped to a five-year low of 42.95 in 2016 (Table 2.3).

Section 2/Cont'd.

Air Passengers

- In 2016, 70.13% of all air passengers stayed at hotel properties (Table 2.4).
- Air passenger arrivals increased 11.23% from 219,814 in 2015 to 244,491 in 2016. Year over year, air passengers originating from the United Kingdom and Canada decreased by 3.43% and 4.97% respectively, while visitors from other countries increased by 6.28% (Table 2.5).

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 km²: 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 km²).

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 km². 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 km²) 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, 2012 - 2016**

Indicator	2012	2013	2014	2015	2016
Total visitors¹	610,325	576,373	580,260	597,212 r	642,395
Percentage change (%)	-6.36	-5.56	+0.67	+2.92 r	+7.56
Air passengers	232,063	236,343	224,380	219,814 r	244,491
Percentage change (%)	-1.68	+1.84	-5.06	-2.04 r	+11.23
Tourist arrival index	59.43	60.52	57.46	56.29	62.61
Cruise ship passengers	378,262	340,030	355,880	377,398 r	397,904
Percentage change (%)	-9.01	-10.11	+4.66	+6.05 r	+5.43
Cruise ship arrivals	157	125	126	132	139
Percentage change (%)	-11.30	-20.38	+0.80	+4.76	+5.30
Average length of stay for air passengers²	5.40	5.30	6.28	6.30	5.99
Population³	62,408	61,954	61,777	61,735	61,695
Air passengers to residents ratio	3.72	3.81	3.63	3.56	3.96
Cruise ship passengers to residents ratio	6.06	5.49	5.76	6.11 r	6.45
Visitors to residents ratio	9.78	9.30	9.39	9.67 r	10.41
Tourism intensity ratio	63.17	63.14	71.03	69.81	73.82
Tourism penetration ratio	55.01	55.39	62.49	61.46	65.03

Sources: Bermuda Tourism Authority and Bermuda Population Projections 2010-2020

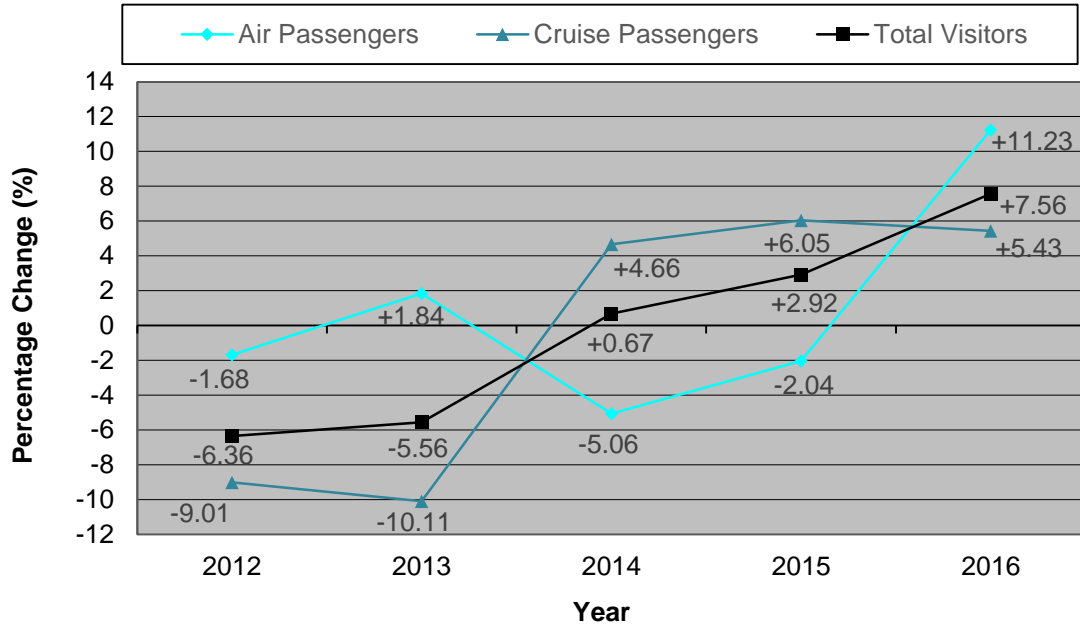
¹ Does not include yacht passengers

² Bermuda Tourism Authority

³ Bermuda Population Projections 2010-2020

Chart 2.1

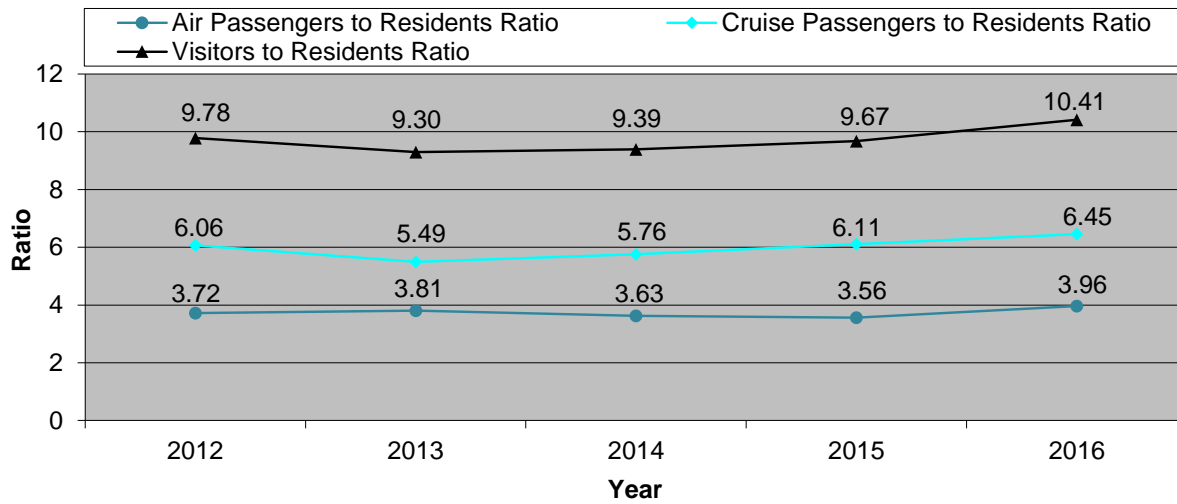
Growth in Air Passengers, Cruise Ship Passengers and Total Visitors, 2012 - 2016



Source: Bermuda Tourism Authority

Chart 2.2

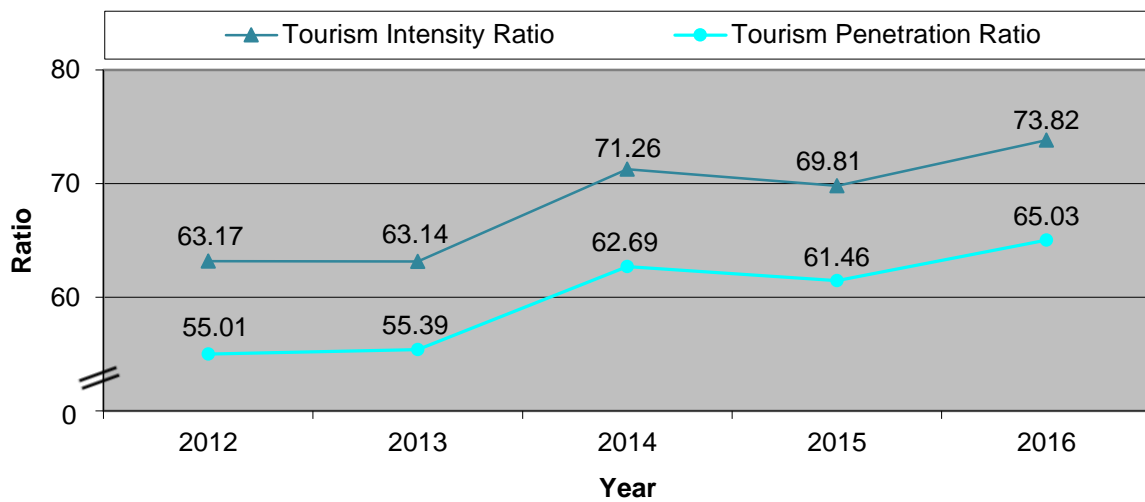
Air Passengers to Residents, Cruise Ship Passengers to Residents and Visitors to Residents Ratios, 2012 - 2016



Sources: Bermuda Tourism Authority and Bermuda Population Projections 2010 - 2020

Chart 2.3

Tourism Intensity and Penetration Ratios, 2012 - 2016



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

Table 2.2**Visitor Expenditure and Number Employed in Tourism, 2012 - 2016**

Item	2012	2013	2014	2015	2016
Visitor expenditure (in US\$'000) ¹	394,400	393,600	327,900 r	335,500 r	398,300
Expenditure on same-day visits	80,100	72,800	52,700 r	62,200 r	65,500
Expenditure on accommodation, meals and drinks, shopping, entertainment, etc.	314,300	320,800	275,200	273,400 r	332,800
Total directly employed in tourism ²					
Female	1,823	1,723	1,635	1,616	1,647
Male	2,562	2,494	2,485	2,396	2,480
Total	4,385	4,217	4,120	4,012	4,127

¹ Source: Bermuda Tourism Authority

² Includes hotels, restaurants, cafés and bars

Table 2.3**Number of Tourist Properties, Occupancy Rate and Number of Rooms per km², 2012 - 2016**

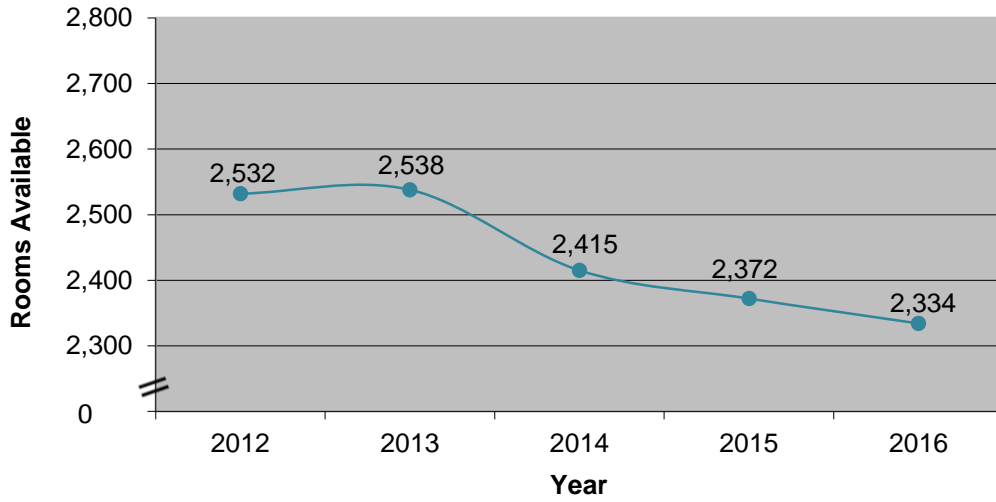
Item	2012	2013	2014	2015	2016
Number of properties	48	47	45	43	42
Total number of rooms available	2,532	2,538	2,415	2,372	2,334
Total number of beds	5,256	5,264	5,018	4,934	4,846
Total number of room nights sold	350,356	342,767	330,393
Occupancy rate (%) ¹	55.70	56.70 r	53.40 r	52.60 r	57.70
Number of rooms per km²	46.60 r	46.71	44.44	43.65	42.95

Source: Bermuda Tourism Authority

¹ 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 Bermuda Tourism Authority.

Chart 2.4

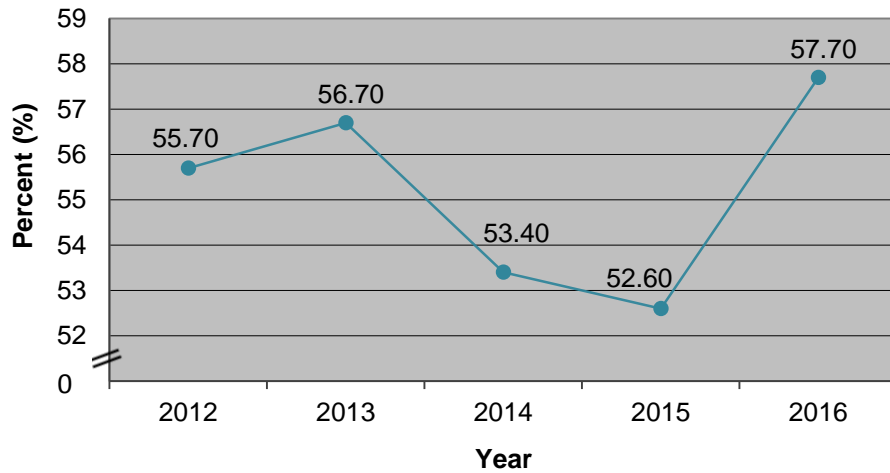
Number of Hotel Rooms Available, 2012 - 2016



Source: Bermuda Tourism Authority

Chart 2.5

Occupancy Rate, 2012 - 2016



Source: Bermuda Tourism Authority

Table 2.4**Visitors by Intended Type of Accommodation, 2012 - 2016**

Type of Accommodation	2012	2013	2014	2015	2016
Hotels or similar ¹	166,425	167,538	153,758	152,176	171,472
Friends and Relatives/Rental House or Apt. ²	56,489	59,423	61,705	57,501	54,362
Bed and Breakfast/Guest House ³	7,590	7,942	7,023	5,575	10,646
Other ⁴	1,559	1,440	1,894	4,562	8,011
Total	232,063	236,343	224,380	219,814	244,491

Source: Bermuda Tourism Authority

¹ Includes resort hotels, small hotels, cottage colonies and clubs.

² Includes private homes.

³ Includes housekeeping accommodations, guest houses and bed and breakfast.

⁴ Includes not stated.

Table 2.5**Air Passenger Arrivals by Country of Origin, 2012 - 2016**

Country of Origin	2012	2013	2014	2015	2016
United States	168,178	171,215	159,382	157,158	182,896
Canada	30,565	27,613	29,162	24,986	23,744
United Kingdom	21,029	23,610	22,179	22,511 r	21,738
Other	12,291	13,905	13,657	15,159 r	16,113
Total	232,063	236,343	224,380	219,814	244,491

Source: Bermuda Tourism Authority

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 2016, there were 5,884 reported cases of environmentally-related diseases in Bermuda. This represented a 6.35% decrease from the 6,283 reported cases in 2015 (Table 3.1).
- Respiratory diseases accounted for 5,224 of the total reported cases in 2016 (88.78%) (Table 3.1).
- In 2016, females accounted for the largest proportion (54.69%) of environmentally-related diseases (Table 3.1).

Weather

- Total rainfall in Bermuda increased by 26.11% over the period 2015 to 2016 (Table 3.2).
- In 2016, the month with the most rain days (24) was January while the least (10) was recorded in July (Table 3.2).
- August had the highest mean air temperatures during 2016 with an average daily air temperature of 82.30°F. The lowest mean air temperature during 2016 was recorded in February (65.60°F) (Table 3.3).
- Over the five-year period, 2012 to 2016, the average daily air temperature reported was 72.42°F. The average maximum daily air temperature was 76.27°F while the average daily minimum air temperature was 68.27°F for the same period (Table 3.3).
- In 2016, May had the highest humidity (80.20%), while the lowest was recorded in November (64.30%). The average relative humidity for the five-year period, 2012 to 2016, was recorded at 74.06% (Table 3.4).

Table 3.1**Reported Cases of Environmentally-Related Diseases by Sex, 2012 - 2016**

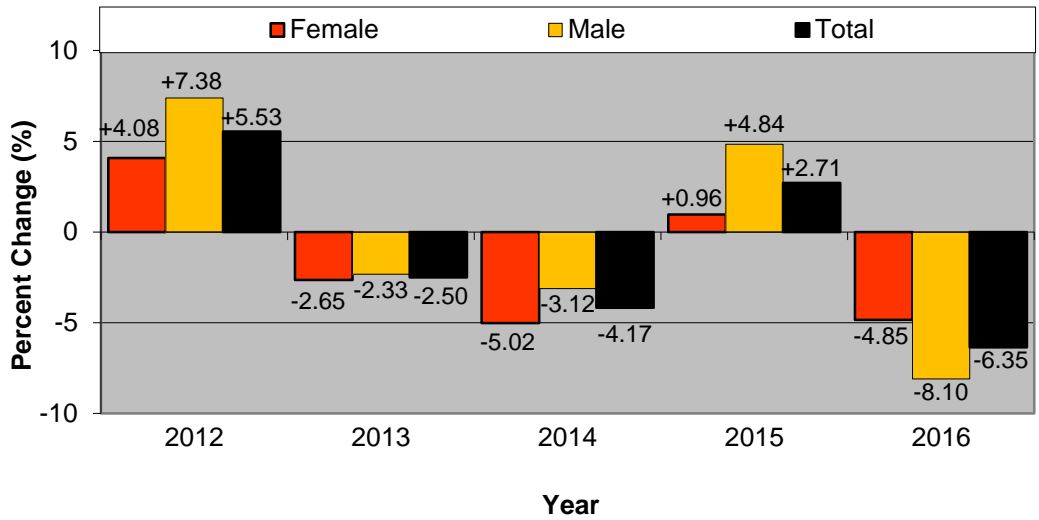
Cause	Sex	2012	2013	2014	2015	2016
Gastroenteritis ¹	Female	359 r ²	337 r ²	354 r ²	373 r ²	264
	Male	299 r ²	244 r ²	230 r ²	309 r ²	202
	Total	658 r ²	581 r ²	584 r ²	682 r ²	466
Malaria (imported)	Female	—	—	— r ²	—	—
	Male	—	1	2 r ²	2	—
	Total	—	1	2 r ²	2	—
Dengue (imported)	Female	—	—	—	—	—
	Male	—	—	—	2	—
	Total	—	—	—	2	—
Accidental pesticide	Female	—	—	1	—	1
	Male	1	—	1	1	—
	Total	1	—	2	1	1
Poisoning	Female	49	37	51	53	44
	Male	32	26	41	42	33
	Total	81	63	92	95	77
Diarrhea	Female	55	63	75	81	65
	Male	55	45	51	53	51
	Total	110	108	126	134	116
Respiratory diseases (all) ³	Female	3,160	3,090	2,869	2,875 r ²	2,844
	Male	2,537	2,540	2,442	2,492 r ²	2,380
	Total	5,697	5,630	5,311	5,367 r ²	5,224
TOTAL CASES, all causes	Female	3,623 r	3,527 r	3,350 r ²	3,382 r	3,218
	Male	2,924 r	2,856 r	2,767 r ²	2,901 r	2,666
	Total	6,547 r	6,383 r	6,117 r ²	6,283 r	5,884
Percentage change (%)	Female	+4.08 r	-2.65 r	-5.02 r	+0.96 r	-4.85
	Male	+7.38 r	-2.33 r	-3.12 r	+4.84 r	-8.10
	Total	+5.53 r	-2.50 r	-4.17 r	+2.71 r	-6.35

Sources: Department of Health and Bermuda Hospital Board

¹ Includes inpatient discharges and emergency encounters.² Includes cases that may have been inadvertently coded as non-infectious gastroenteritis.³ Respiratory diseases (all) includes acute bronchitis, chronic sinusitis, asthma, pneumonia, etc.

Chart 3.1

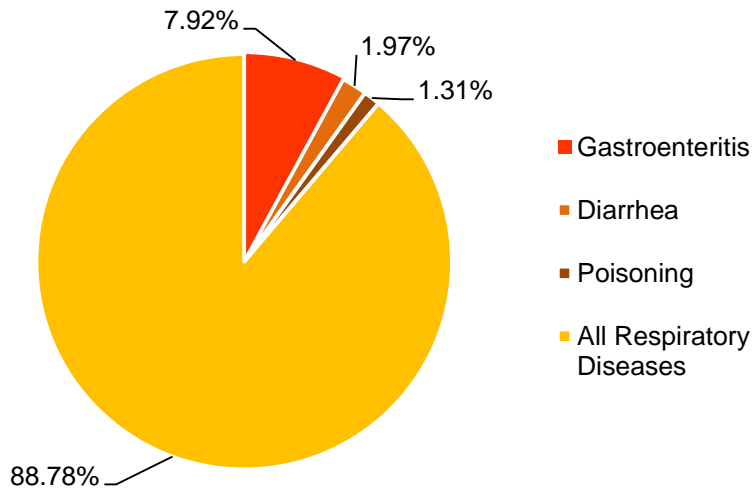
Percentage Change in Reported Cases of Environmentally-Related Diseases by Sex and Total, 2012 - 2016



Source: Department of Health and Bermuda Hospital Board

Chart 3.2

Reported Cases of Environmentally-Related Diseases by Cause, 2016¹



Source: Department of Health and Bermuda Hospital Board

¹ Excludes Accidental Pesticide (0.02%)

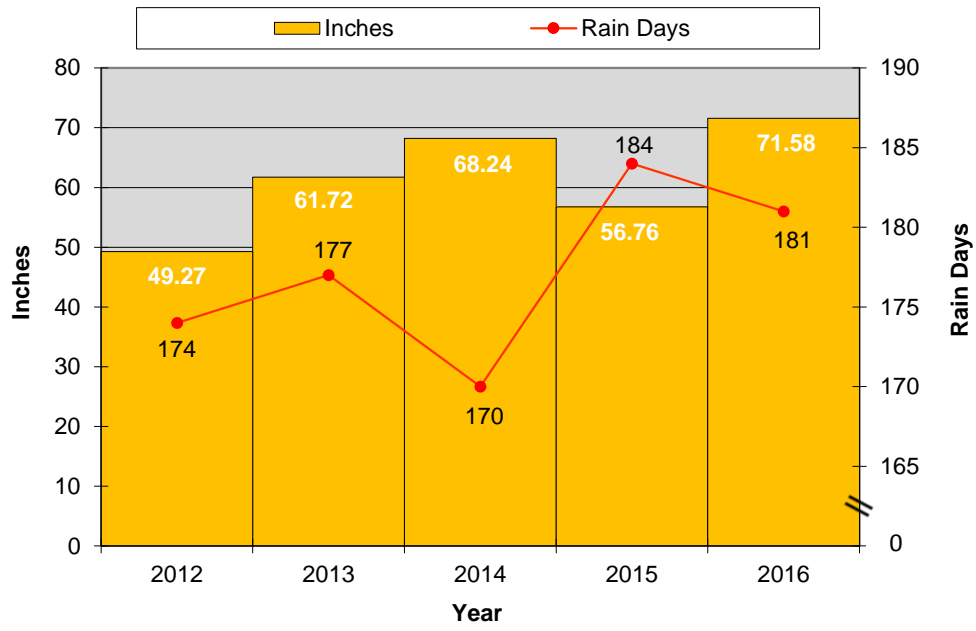
Table 3.2**Total Number of Inches of Rainfall and Rain Days, 2012 - 2016**

Year		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
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
2016	Inches	6.93	5.52	7.68	2.93	6.61	4.99	4.10	3.28	11.80	10.65	3.47	3.62	71.58
	Rain Days	24	18	16	16	11	16	10	15	17	13	12	13	181

Source: The Bermuda Weather Service

Chart 3.3

Total Number of Inches of Rainfall and Rain Days, 2012 - 2016



Source: The Bermuda Weather Service

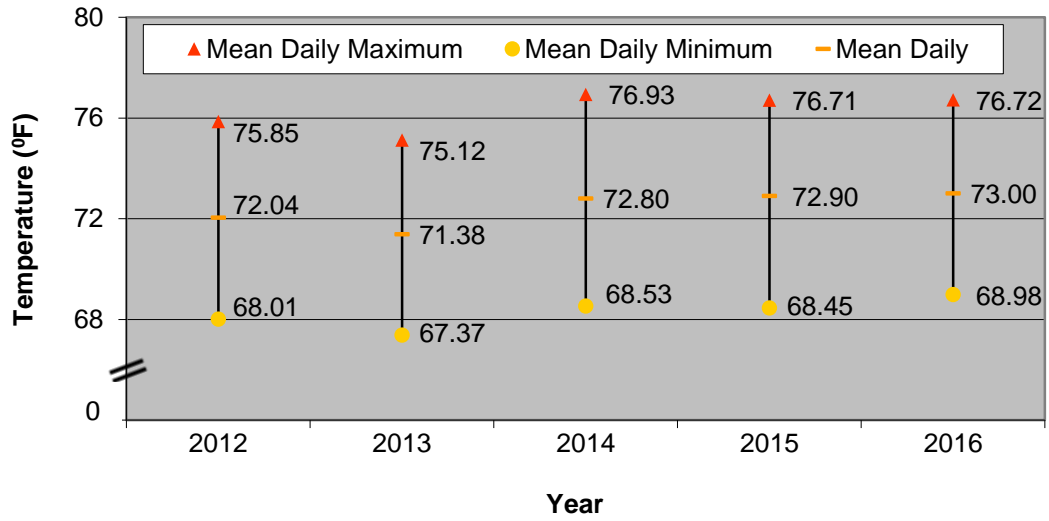
Table 3.3**Mean Daily Maximum, Minimum and Daily Air Temperature, 2012 - 2016**

Year		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	(°F)
														Yearly Average
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
2016	Mean Daily Max.	70.40	69.40	71.20	71.60	76.90	80.60	85.40	86.50	84.80	79.90	72.70	71.20	76.72
	Mean Daily Min.	62.60	61.10	63.10	63.80	69.50	73.50	77.90	78.20	76.80	72.80	65.00	63.50	68.98
	Mean Daily	66.60	65.60	67.60	67.90	73.30	76.90	81.50	82.30	81.20	76.40	69.20	67.50	73.00

Source: The Bermuda Weather Service

Chart 3.4

Mean Daily Maximum, Minimum and Daily Air Temperature, 2012 - 2016



Source: The Bermuda Weather Service

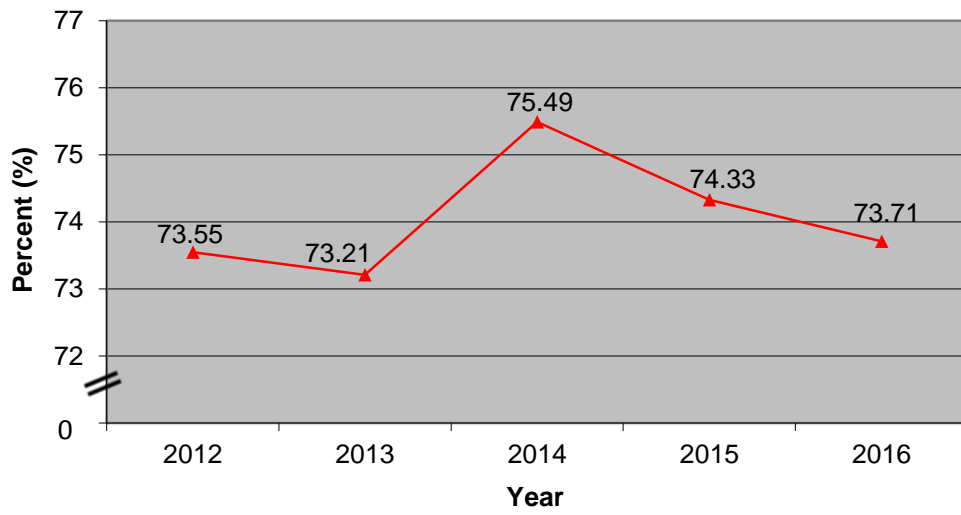
Table 3.4**Mean Relative Humidity, 2012 - 2016**

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	(%) Yearly Average
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
2016	72.30	73.80	74.90	71.60	80.20	79.40	77.40	73.80	74.90	70.70	64.30	71.20	73.71

Source: The Bermuda Weather Service

Chart 3.5

Mean Relative Humidity, 2012 - 2016



Source: The Bermuda Weather Service

NATURAL AND ENVIRONMENTAL DISASTERS

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

Hurricanes

- In October 2016, Hurricane Nicole caused \$15 million worth of damages (Table 4.1).

Fires

- The total number of fires reported in Bermuda increased from 1,875 in 2015 to 2,033 in 2016 (+8.43%) (Table 4.2).
- In 2016, the majority of fires (52.58%) 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, 2016

Item

Type of disaster	Hurricane
Date started	October 13 th
Total casualties:	—
of which: dead	—
Total population affected ¹	58,638
Damage (\$ million) ²	15

Source: The Bermuda Business Development Agency

¹ Persons in households who lost electricity due to Hurricane Nicole. The calculation is 26,923 households X 90% = 24,231 X 2.39 average persons per household = 57,912.

² Insured losses.

Table 4.2

Incidences of Fire by Type, 2012 - 2016

Year	Total	Minor Incidents ¹	Structure ²	Island Fires	Vehicle	Boat Fires	Other ^{1,3}
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
2016	2,033	298	1,069	..	18	..	648

Source: Bermuda Fire and Rescue Service

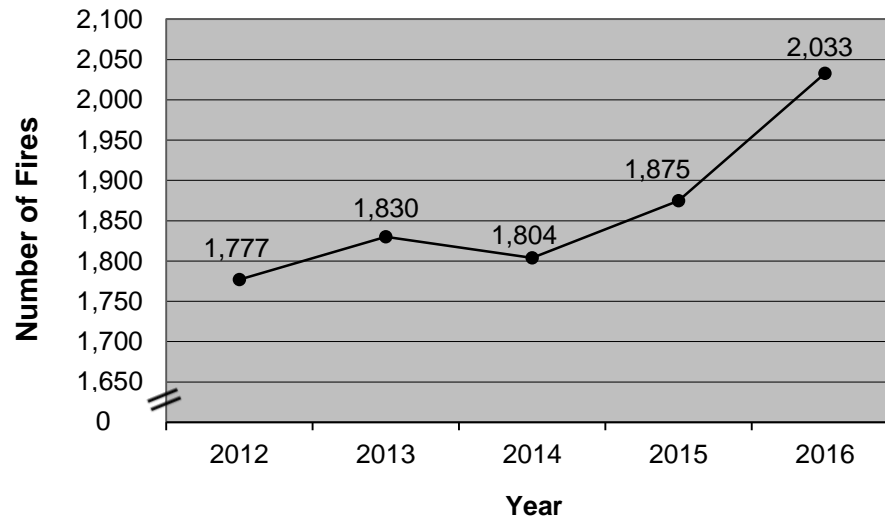
¹ Includes brush, trash, gas cylinder leaks, oil spills, floodings, pole fires, etc.

² Includes false alarms.

³ 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, 2012 - 2016



Source: Bermuda Fire and Rescue Service

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 2016, the value of imported petroleum oils and oils from bituminous minerals, other than crude imported into Bermuda, was \$79.6 million, a decrease of 11.01 percent from the total value imported in 2015 (Table 5.1).
- The quantity of imported fuels increased to 182.3 million kg in 2016, an increase of 7.94 percent over the previous year (Table 5.1).

Mineral Fuels

- In 2016, the value of imported mineral fuels, mineral oils and related products dropped to \$82.2 million. This is a 10.35% decrease from the \$91.7 million imported in 2015 (Table 5.2).

Electricity

- Total electricity consumption in 2016 fell to approximately 586 million kWh from 590 million kWh in 2015. The commercial sector accounted for just under half (48.92%) of all electricity consumed in Bermuda (Table 5.3).

Transport

- In 2016, there were 47,387 registered road vehicles in Bermuda. Private cars accounted for nearly half (45.88%) of this total, while just under one-third (34.05%) were motorcycles and scooters (Table 5.6).

Table 5.1**Value of Imported Fuel¹ by Type, 2014 - 2016**

Type	2014		2015		2016	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Light oils & preparations (i.e. motor spirits)	30,900,182	23,460,256	14,718,077	15,158,486	16,787,737	22,213,786
Gas oils (diesel)	9,297,419	13,062,959	5,849,354	7,779,153	13,246,535	19,640,803
Gas oils (heavy atmospheric)	24,168,550	45,559,746	11,935,809	22,074,662	8,311,503	18,116,640
Kerosene & other medium oils (not including gas oils)	18,770,636	22,506,801	11,374,549	20,208,931	10,046,836	20,488,022
Fuel oils not elsewhere specified	61,749,226	102,770,849	42,501,889 r	102,463,606 r	28,269,458	100,768,604
Other lubricating oils & greases, etc.	4,038,685	1,244,945	3,104,778	1,198,566	2,970,482	1,058,303
Other waste oils	113,915	34,751	15,524	2,256	16,411	2,853
Total	149,038,613	208,640,307	89,499,980 r	168,885,660 r	79,648,962	182,289,011

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, 2014 - 2016**

Type	2014		2015		2016	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Coal, briquettes	9,848	7,510	20,996	7,707	22,211	10,572
Lignite	—	—	—	—	—	—
Peat	63,339	62,238	66,718	48,576	81,706	65,616
Coke and semi coke	98,397	64,261	85,425	50,116	75,576	48,906
Coal gas, water gas	—	—	—	—	—	—
Tar distilled	1,901	2,663	3,960	5,974	781	2,000
Oils and other products	10,995	2,429	97,511	3,209	16,949	3,494
Pitch and pitch coke	—	—	—	—	—	—
Petroleum oils	—	—	—	—	—	—
Petroleum oils other than crude	149,038,615	208,640,307	89,501,658	168,886,296	79,649,286	182,289,097
Petroleum gases & other gaseous hydrocarbons	2,829,685	6,724,734	1,491,365	3,723,766	1,859,422	25,550,267
Petroleum jelly	50,868	20,685	126,896	76,613	39,900	5,964
Petroleum coke	17,676	2,072	66,894	7,170	42,037	4,337
Other bitumen and asphalt	4,437	24,719	10,140	7,689,946	47,103	117,655
Bituminous mixtures	420,572	596,870	262,471	437,774	403,384	859,538
Electrical energy	—	—	—	—	—	—
Total	152,546,333	216,148,488	91,734,034	180,937,147	82,238,355	208,957,446

Source: Department of Statistics

Table 5.3**Electricity Consumption by Type of Consumer, 2012 - 2016**

Year	Total (‘000 kWh)	Type		
		Residential (‘000 kWh)	Commercial (‘000 kWh)	Other ¹ (‘000 kWh)
2012	606,346	249,749	307,269	49,328
2013	586,704	244,421	295,043	47,240
2014	577,365	235,523	291,350	50,492
2015	590,427	245,498	290,552	54,377
2016	585,774	245,105	286,588	54,081

Source: Ascendant Group Limited

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, 2012 - 2016**

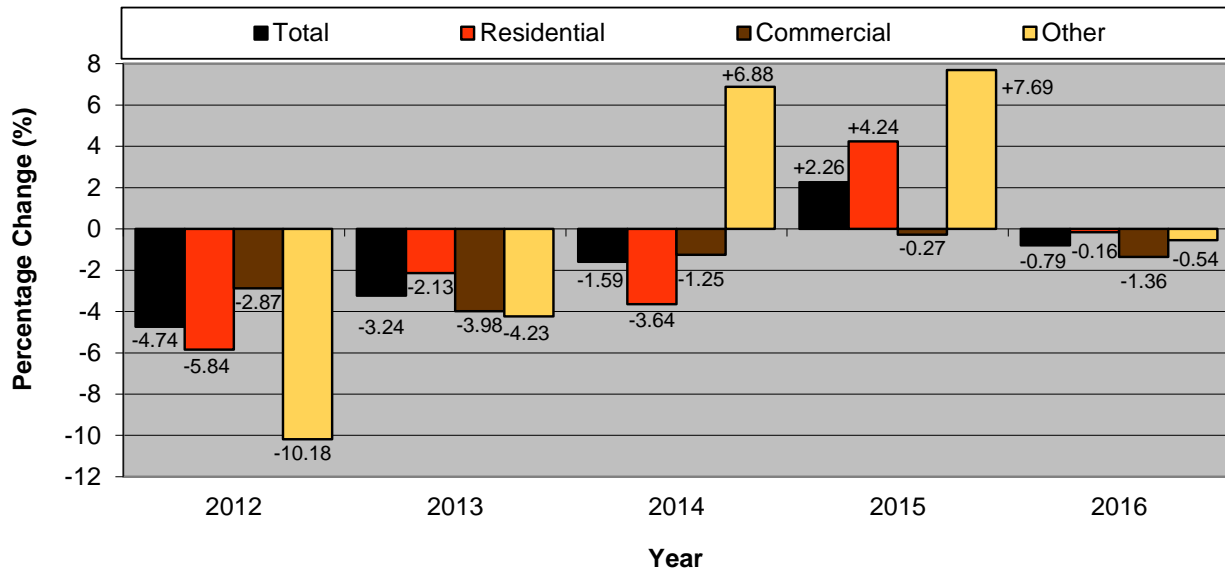
Year	Growth Total Electricity Consumption	Type		
		Residential %	Commercial %	Other ¹ %
2012	-4.74	-5.84	-2.87	-10.18
2013	-3.24	-2.13	-3.98	-4.23
2014	-1.59	-3.64	-1.25	+6.88
2015	+2.26	+4.24	-0.27	+7.69
2016	-0.79	-0.16	-1.36	-0.54

Source: Ascendant Group Limited

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

Chart 5.1

Growth in Electricity Consumption by Type of Consumer and Total Consumption, 2012 - 2016



Source: Ascendant Group Limited

Table 5.5

Percentage of Total Electricity Consumption by Type of Consumer, 2012 - 2016

Year	Total	Type		
		Residential %	Commercial %	Other ¹ %
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
2016	100	41.84	48.92	9.23

Source: Ascendant Group Limited

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

Table 5.6**Registered Road Vehicles ¹, 2012 - 2016**

Type	2012	2013	2014	2015	2016
Private Cars	21,707	21,564	21,464	21,607	21,743
Buses, Minibuses & Limousines	185	187	190	208	172
Taxis	579	581	576	564	557
Trucks	3,746	3,655	3,620	3,583	3,669
Trailers	321	288	290	280	235
Farm Tractors	26	25	29	29	22
Ambulances & Fire Engines	41	44	46	45	43
Military Vehicles	36	32	31	33	33
Tractors & Tractor Trailers	393	376	338	319	258
Light Private Cars	94	81	80	76	76
Auxiliary Cycles ²	4,754	4,458	4,196	4,074	3,884
Motor Cycles & Scooters	14,887	15,009	15,134	15,659	16,135
Construction Vehicles ³	72	60	53	53	25
Government Private (GP) Vehicles ⁴	257	252	254	244	237
Other ⁵	361	335	324	318	298
Total	47,459	46,947	46,625	47,092	47,387
Percentage change (%)	-2.47	-1.08	-0.69	+1.00	+0.63

Source: Transport Control Department

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

² Includes livery cycles.

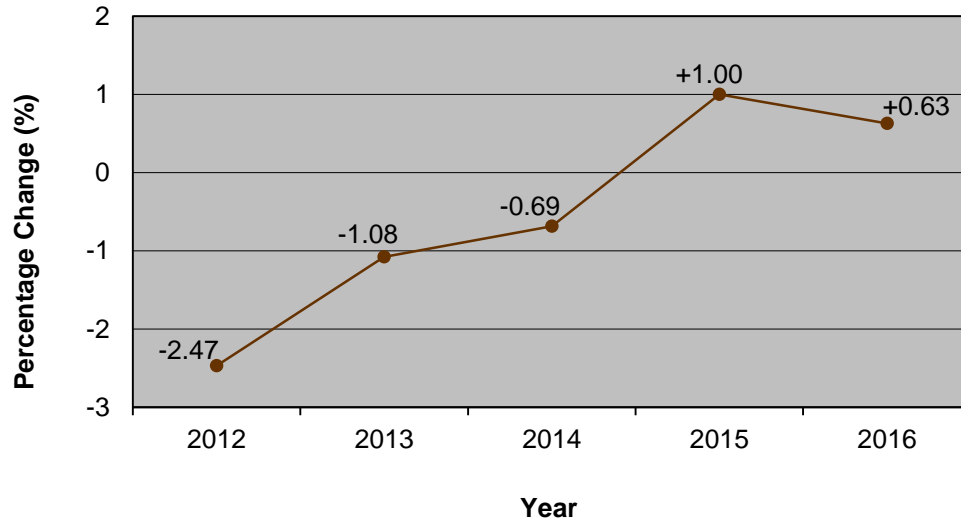
³ Includes cement mixers.

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

Percentage Change in Registered Road Vehicles, 2012 - 2016



Source: Transport Control Department

AGRICULTURE

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

Fertilizers and Pesticides

- In 2016, the value of fertilizers imported into Bermuda totaled nearly \$541 thousand for 308,762 kg (Table 6.1).
- In 2016, other fertilizers accounted for almost half (45.06%) of the total value of fertilizers imported to Bermuda (Table 6.1)
- In 2016, the value of pesticides imported into Bermuda totaled approximately \$2 million for 664,346 kg (Table 6.2).
- In 2016, insecticides accounted for \$1,041,277 of imported pesticides. Disinfectants represented 46.31% (307,633 kg) of the total quantity of imported pesticides (Table 6.2).

Table 6.1

Imported Fertilizers by Type, 2014 - 2016

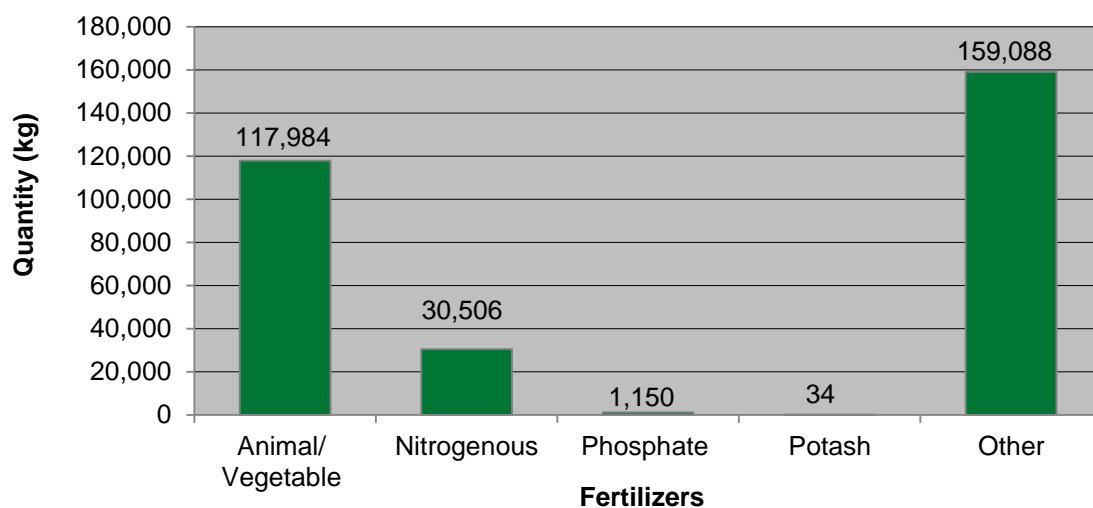
Category	2014		2015		2016	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Animal/Vegetable fertilizers	240,880	89,430	205,005	59,821	207,310	117,984
Nitrogenous fertilizers	56,608	34,120	75,123	23,256	85,965	30,506
Phosphate fertilizers	438	100	20,412	527	1,218	1,150
Potash fertilizers	6,252	153	9,250	1,375	2,497	34
Other fertilizers ¹	345,436	192,399	297,176	185,277	243,614	159,088
Total	649,614	316,202	606,966	270,256	540,604	308,762
Percentage change (%)	-1.53	-15.05	-6.56	-14.53	-10.93	+14.25

Source: Department of Statistics

¹ Other fertilizers include mixtures of two or three of the fertilizing elements nitrogen, phosphorus or potassium.

Chart 6.1

Imported Fertilizers by Type, 2016



Source: Department of Statistics

Table 6.2

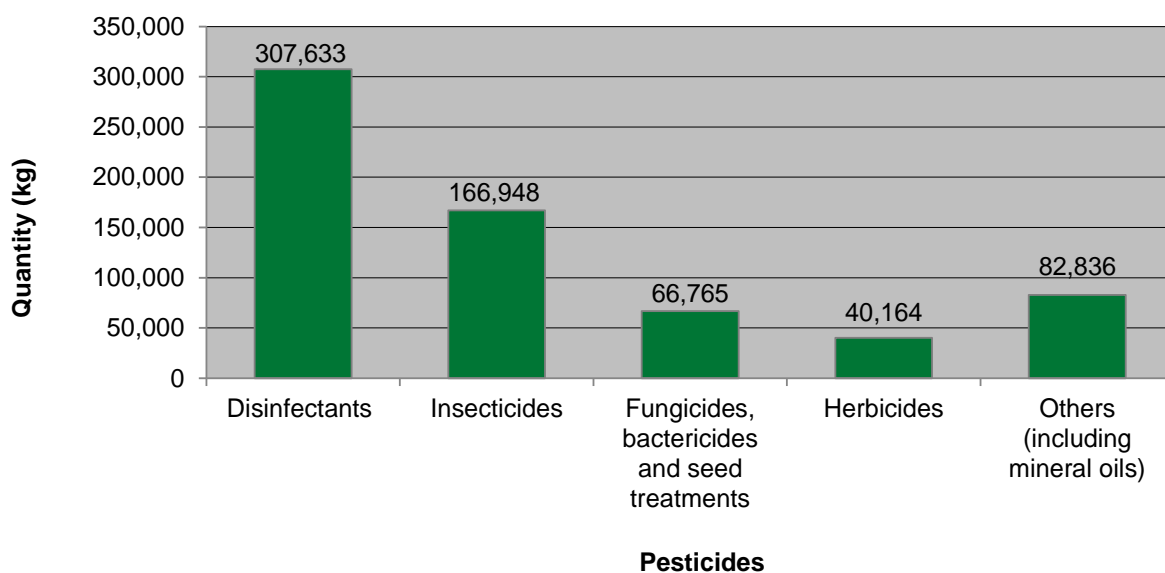
Imported Pesticides by Type, 2014 - 2016

Category	2014		2015		2016	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Disinfectants	467,428	164,707	490,923	226,962	510,664	307,633
Insecticides	811,823	135,776	866,730	143,154	1,041,277	166,948
Herbicides	236,482	76,685	339,472	87,701	221,916	40,164
Fungicides, bactericides and seed treatments	92,493	50,744	115,513	31,564	64,645	66,765
Others (including mineral oils)	222,074 r	75,086 r	217,213 r	70,295	198,810	82,836
Total	1,830,300 r	502,998 r	2,029,851 r	559,676 r	2,037,312	664,346
Percentage change (%)	-7.07 r	+15.21 r	+10.90 r	+11.27 r	+0.37	+18.70

Source: Department of Statistics

Chart 6.2

Imported Pesticides by Type, 2016



Source: Department of Statistics

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 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) and the Town of St. George has the most (341.00 acres) (Table 7.2.2).

Table 7.1

Land Use, 2016

Main Use	Sub-Category	Total Area (Acres)	Percentage Distribution
Commercial	Retail	126.16	0.95
	Office	63.03	0.48
	Mixed-use	36.45	0.27
	Total	99.48	0.75
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
	Religious	87.48	0.66
	Government	63.97	0.48
	Police	59.07	0.45
	Hospital	30.32	0.23
	Prison	16.76	0.13
	Social	12.24	0.09
	Total	524.04	3.96
Open space	Nature reserve	1,258.08	9.48
	Rural	1,162.82	8.76
	Other	946.23	7.13
	Golf courses	808.77	6.10
	Recreation	240.92	1.82
	Total	4,416.82	33.29
	Residential	Housing	5,799.45
Condos		162.25	1.22
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
	Waste	67.07	0.51
	Transport	44.04	0.33
	BELCO	37.95	0.29
	Docks	36.82	0.28
	Total	734.30	5.54
Vacant	Vacant land	610.27	4.60
	Vacant buildings	119.90	0.90
	Total	119.9	0.90
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, 2016

Main Use / Sub-Category	St. George's	Town of St. George	Hamilton	Smith's	Devonshire	Pembroke	The City of Hamilton	Paget	Warwick	Southampton	Sandy's
Commercial	32.50	11.05	11.01	2.92	10.82	27.16	66.79	16.39	9.89	10.16	26.95
Office	18.96	0.45	—	—	4.19	15.11	16.93	6.57	0.83	—	—
Retail	13.54	6.33	11.01	2.92	6.63	12.05	17.68	9.82	9.06	10.16	26.95
Mixed-use	—	4.27	—	—	—	—	32.18	—	—	—	—
Industrial	99.55	8.92	47.45	21.09	18.85	55.59	12.34	4.12	18.00	21.79	13.91
General	66.59	1.30	11.49	9.46	11.34	52.94	5.96	0.74	7.78	18.91	13.91
Light industrial	32.96	7.62	—	—	7.51	2.65	6.38	3.38	1.00	2.88	—
Quarry	—	—	35.96	11.63	—	—	—	—	9.22	—	—
Institutional	48.09	34.29	12.95	15.81	72.62	96.85	30.65	66.43	55.09	30.66	60.57
Education	27.30	20.42	8.89	11.29	35.96	47.78	4.35	27.93	28.04	16.96	25.28
Police	15.47	0.54	—	—	9.33	1.30	1.14	—	9.02	6.83	15.43
Religious	2.31	10.00	4.06	4.52	5.04	15.67	6.58	10.30	10.28	6.87	11.85
Prison	1.53	—	—	—	—	2.81	5.25	4.59	2.57	—	—
Government	1.48	2.94	—	—	11.03	25.49	12.54	8.87	0.47	—	1.15
Hospital	—	—	—	—	11.26	0.62	0.51	14.74	—	—	3.18
Social	—	0.39	—	—	—	3.18	0.28	—	4.71	—	3.68
Utilities	606.22	9.80	11.42	6.71	23.83	23.77	26.88	0.00	0.22	5.07	20.35
Airport	548.42	—	—	—	—	—	—	—	—	—	—
Waste	36.98	2.44	10.84	—	14.13	—	—	—	—	—	2.67
Transport	10.18	3.22	0.58	—	4.97	3.16	16.14	—	—	3.31	2.48
Docks	6.54	3.70	—	—	0.36	0.29	10.28	—	0.22	0.33	15.08
BELCO	4.10	0.44	—	6.71	4.37	20.32	0.46	—	—	1.43	0.12

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

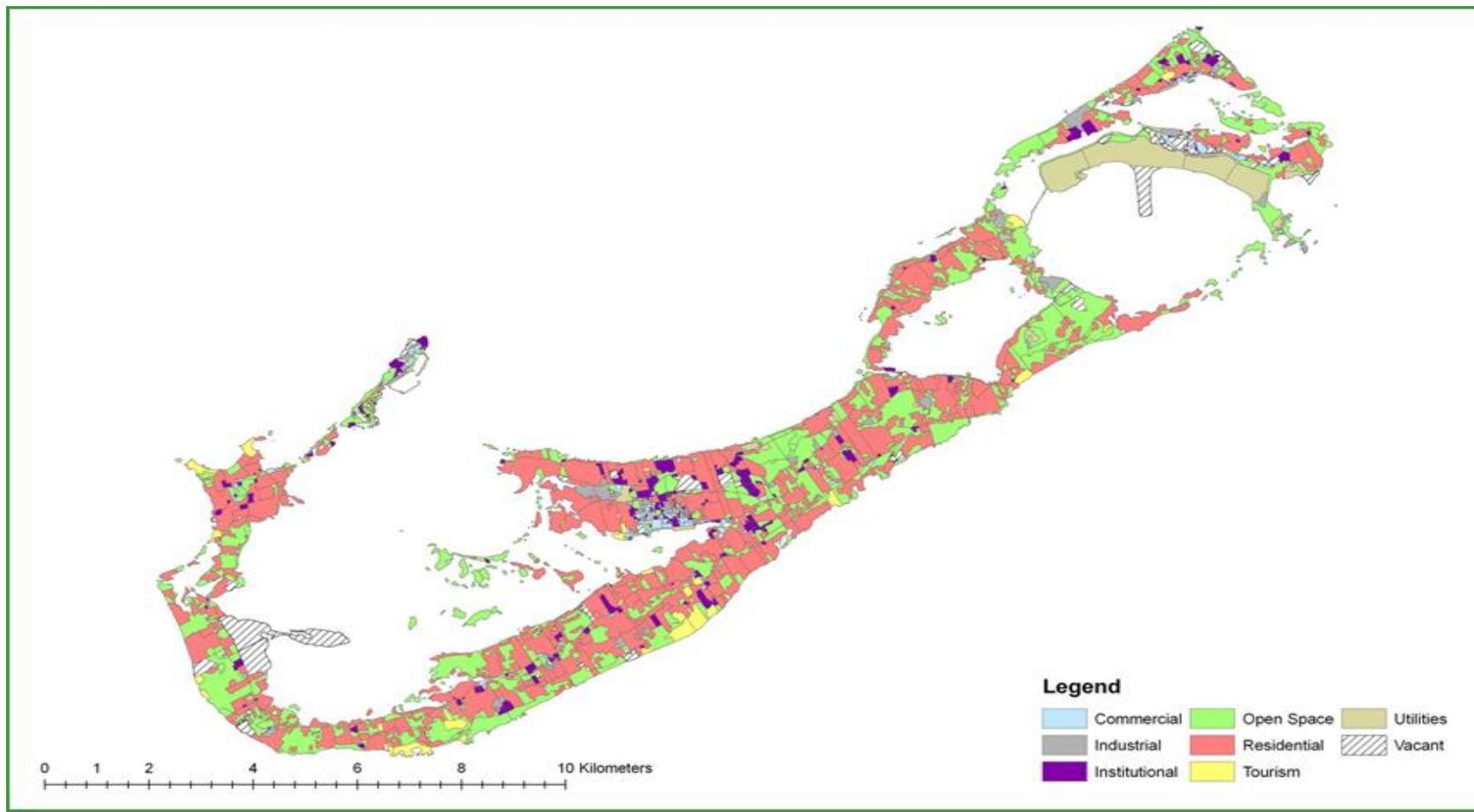
Land Use by Parish, City and Town In Acres, 2016

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

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, 2016



Source: Department of Planning

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 km², of which 6.96% or 294.74 km² 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 km² (Table 8.2).
- A total of 12 marine parks have been established in Bermuda covering an area of 1.86 km² (Table 8.2).
- There are two fisheries seasonal protected areas that measure 153.36 km² (Table 8.2).
- Two coral reef preserves occupy a total of 131.07 km² (Table 8.2).

Fisheries

- Fish landings totaled 331.90 metric tonnes (mT) in 2016, a decrease of 0.37% over 2015. The tuna and pelagic group was the most popular catch at 142.82 mT (Table 8.4).
- In 2016, 277 registered fishermen spent a total of 67,709 hours at sea. The 7.67% decrease in registered fishermen accounted for 9,403 fewer hours (12.19%) at sea (Table 8.5).

Table 8.1

Total and Protected Marine Area, 2016

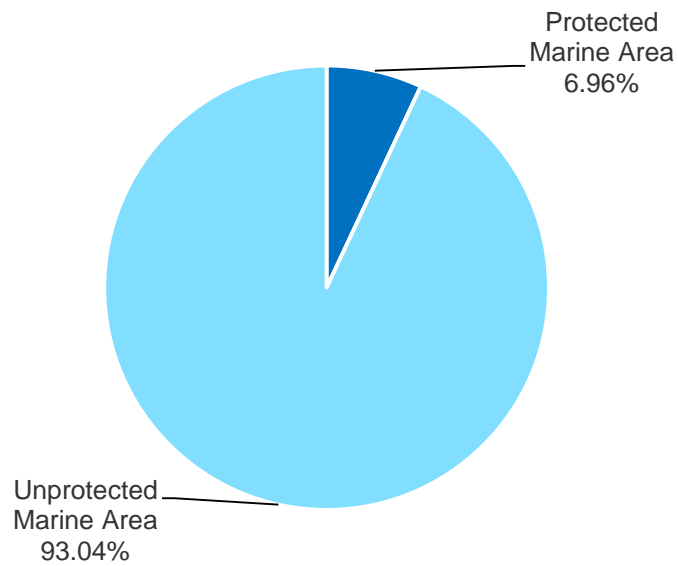
Indicator

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, 2016



Source: Department of Planning

Table 8.2

Marine Protected Areas by Category and Area, 2016

Marine Protected Areas	Area (km²)	Marine Protected Areas	Area (km²)
Coral Reef Preserves		Protected Dive Sites	
North Shore Coral Reef Preserve	126.25	North Rock	3.14
South Shore Coral Reef Preserve	4.82	SW Breaker	1.13
Subtotal	131.07	Eastern Blue Cut	1.13
Fisheries Seasonal Protected Areas		Pelinaion	0.79
South Western Area	114.69	Hermes	0.79
North Eastern Area	38.67	Constellation	0.79
Subtotal	153.36	Cristobal Colon	0.28
Marine Parks		NE Breaker	0.28
Castle Island Marine Park	0.69	Taunton	0.28
South Shore Marine Park	0.37	Aristo	0.28
Cooper's Island Marine Park	0.28	Mills Breaker	0.28
Walsingham Marine Park	0.22	Cathedral	0.28
John's Smiths Bay Marine Park	0.08	Kate	0.28
Tobacco Bay Marine Park	0.08	Tarpon Hole	0.28
Spittal Pond Marine Park	0.06	Marie Celeste	0.28
Church Bay Marine Park	0.03	North Carolina	0.28
Astwood Bay Marine Park	0.02	Airplane	0.28
Shelly Bay Marine Park	0.02	Blanche King	0.28
Daniel's Head Marine Park	0.01	Darlington	0.28
Somerset Long Bay Marine Park	0.01	L'Herminie	0.28
Subtotal	1.86	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 (km²)

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 km²) to avoid double counting.

² Territorial area (net) means total water area and does not include the land area of 54.35 km².

Table 8.3.1

Marine Protected Areas Around Bermuda, 2016

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

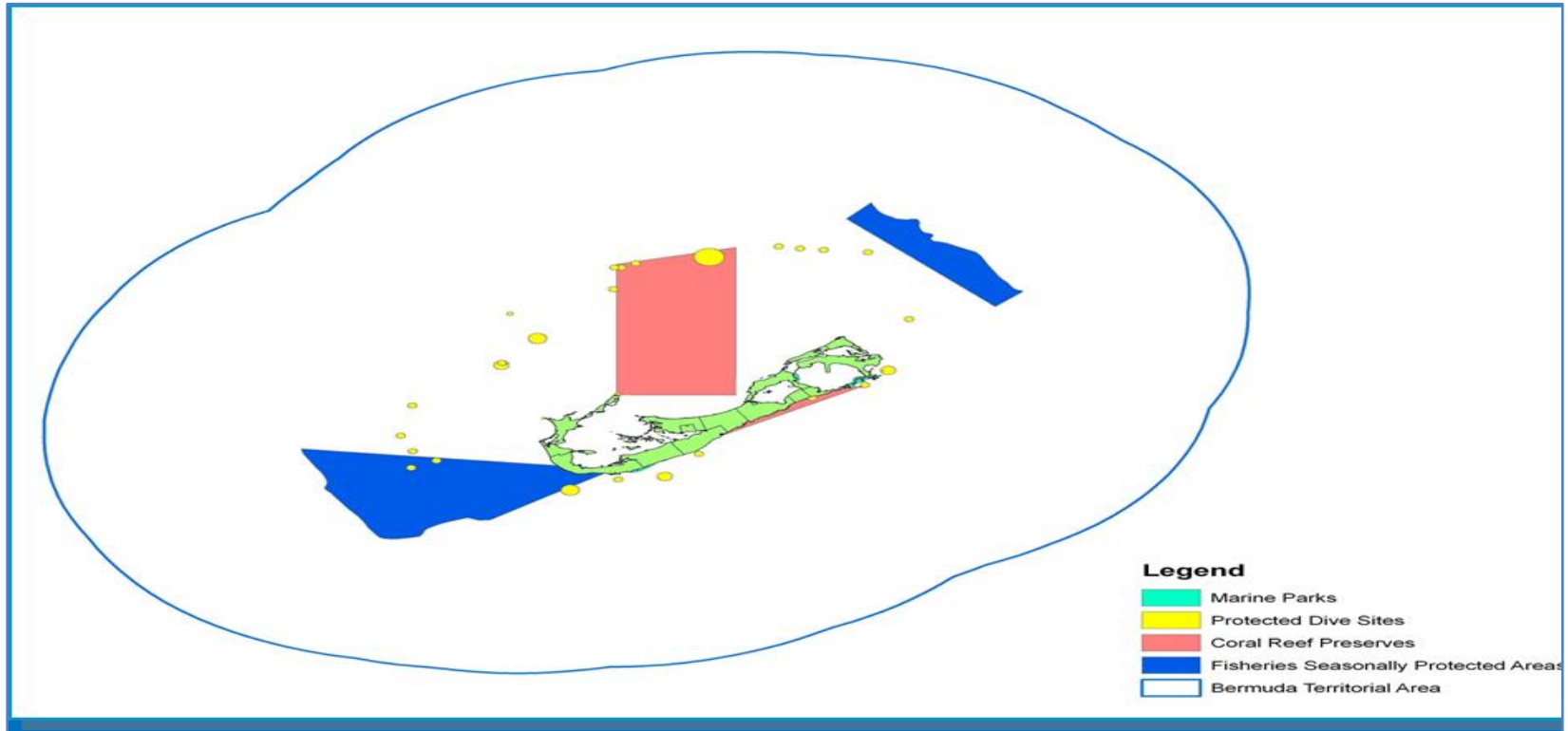
Marine Protected Areas Around Bermuda, 2016

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	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, 2017



Source: Department of Planning

Table 8.4**Quantity of Fish Landings by Type, 2012 - 2016**

Species Group	2012	2013	2014	2015	(mT) 2016
Tuna and pelagic	187.89	140.97	122.52	136.36	142.82
Groupers	74.09	75.65	77.44	70.77	64.02
Jacks and related species	77.04	71.76	55.82	58.42	53.18
Snappers	39.13	46.23	39.46	39.73	47.86
Miscellaneous	36.91	44.20	33.91	23.97	18.82
Sharks	6.40	5.00	4.43	3.88	5.20
Total	421.46	383.81	333.58	333.13	331.90
Bait	41.84	39.96	31.52	31.47	37.92
Total including bait	463.30	423.77	365.10	364.60	369.82
Shellfish ¹	46.58	33.65	43.13	37.69	33.10
Total including bait & shellfish	509.88	457.42	408.23	402.29	394.03
Percentage change (%)	+5.66	-10.29	-10.75	-1.46	-2.05

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, 2012 - 2016**

Indicators	2012	2013	2014	2015	2016
Total catch¹ (mT)	509.88	457.42	408.22	402.29	402.92
Percentage change (%)	+5.66	-10.29	-10.76	-1.45	+0.16
Average catch of fishing area ² (mT per km ²)	0.12	0.11	0.10	0.09	0.10
Total hours at sea	85,729	84,106	76,335	77,112	67,709
Percentage change (%)	+2.53	-1.89	-9.24	+1.02	-12.19
Total number of licences³	200	192	178	183	176
Percentage change (%)	+3.63	-4.00	-7.29	+2.81	-3.83
Total hours at sea per licence	429	438	474	421	385
Percentage change (%)	-9.68	+2.10	+8.22	-11.18	-8.55
Total registered fishermen	356	315	293	300	277
Percentage change (%)	+16.72	-11.52	-6.98	+2.39	-7.66

Source: Department of Environmental Protection, Marine Resources Division

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

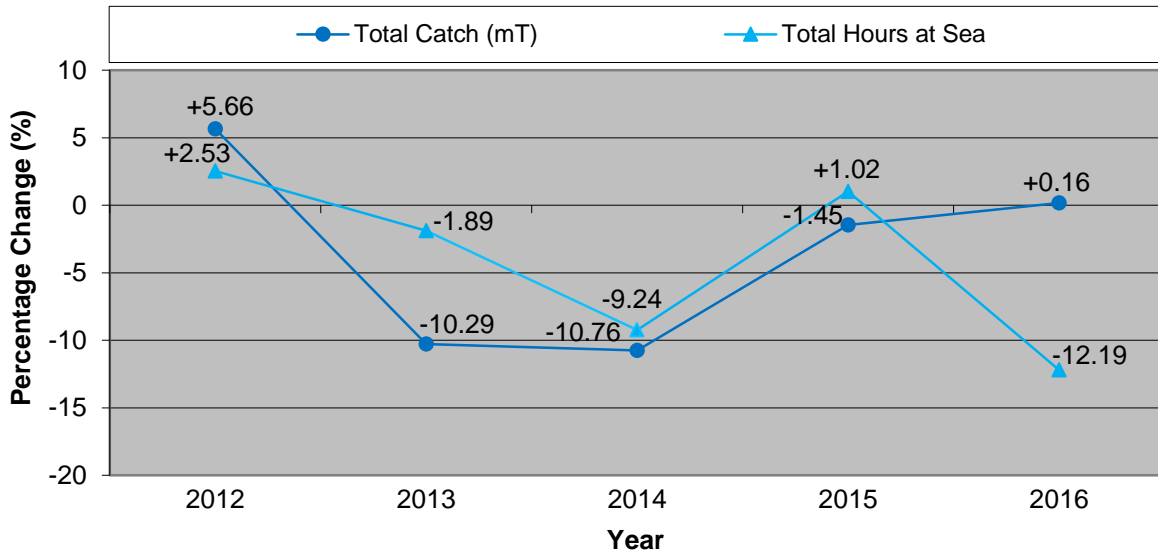
² Total fishing area is estimated as 4,236.11 km² (Department of Planning, see Table 8.1). Fishing area includes the fisheries seasonal protected areas (153.36 km²) which are closed between May 1st and August 31st.

Computation: Average catch of fishing area = Total catch (mT) / Total estimated fishing area of 4,236.11 km².

³ Some licences have a smaller ancillary vessel attached.

Chart 8.2

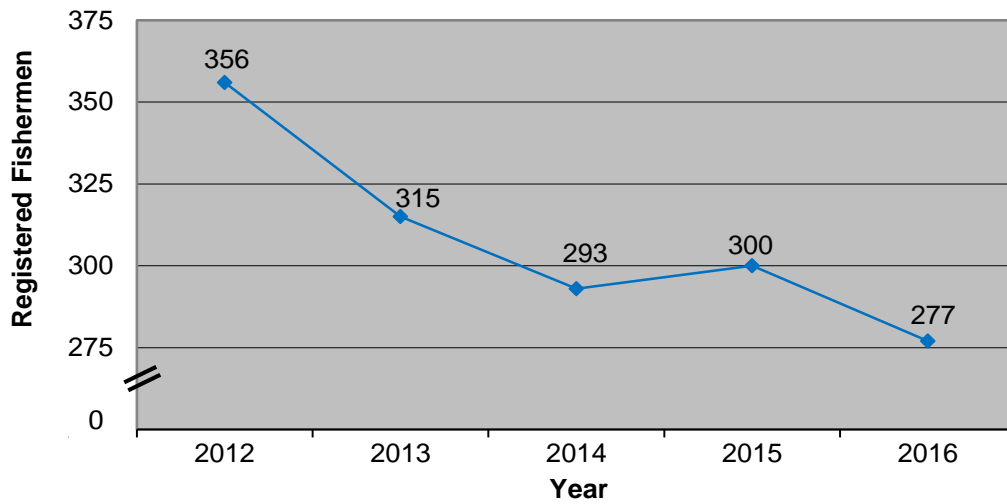
Growth in Total Catch and Total Hours at Sea, 2012 - 2016



Source: Department of Environmental Protection, Marine Resources Division

Chart 8.3

Number of Registered Fishermen, 2012 - 2016



Source: Department of Environmental Protection, Marine Resources Division

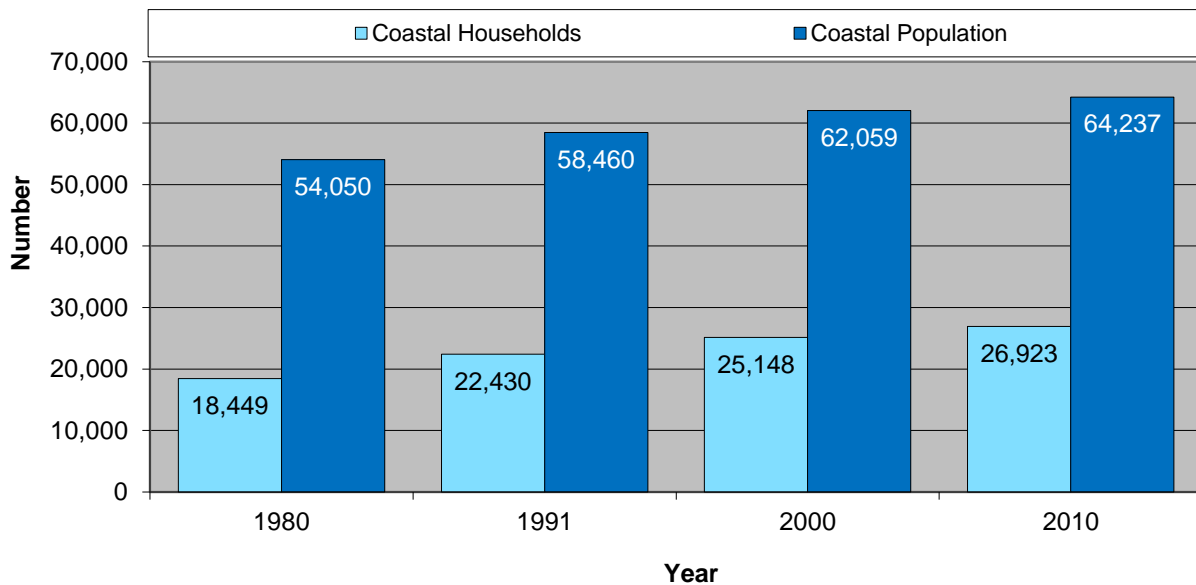
Table 8.6**Number of Households and Population of Coastal Areas for Census Years 1980, 1991, 2000 and 2010**

Indicators	Census Years			
	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 to 2010 Census of Population and Housing

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

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

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

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 km². 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 km²), protected land area represents 45.85 percent or 24.92 km². Protected water area represents 6.96 percent of 294.74 km² 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

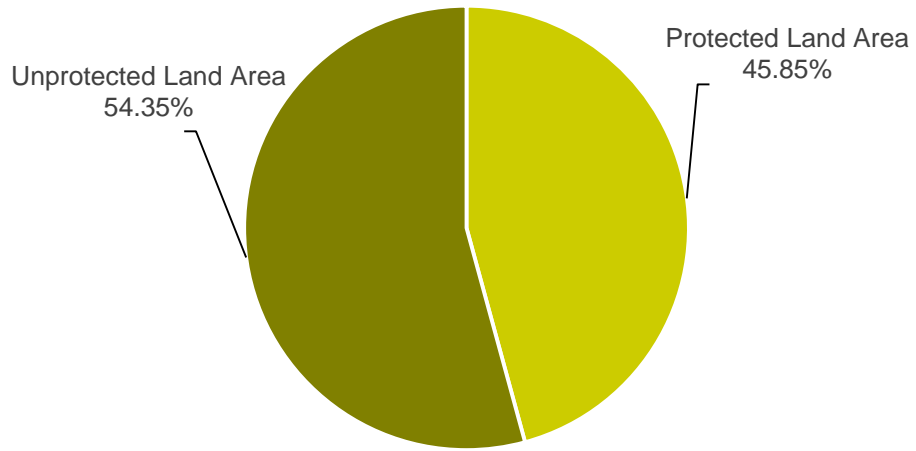
Table 9.1**Protected Areas, 2016****Category**

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

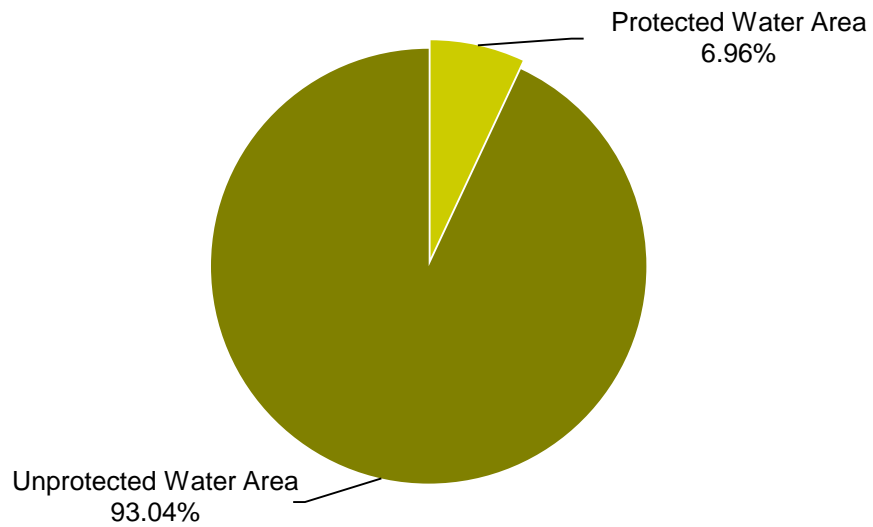
Protected Land Area as a Percentage of Total Land Area, 2016



Source: Department of Planning

Chart 9.2

Protected Water Area as a Percentage of Total Water Area, 2016



Source: Department of Planning

Table 9.2**Protected Areas by Category and Area, 2016**

Protected Area Category	Acres	km²
Conservation base zones		
Open space reserve	1,298.10	5.25
Recreation	963.92	3.90
Park	884.57	3.58
Coastal reserve	823.29	3.33
Nature reserve	770.09	3.12
Sub-total	4,739.97	19.18
Conservation areas		
Woodland reserve	983.94	3.98
Agricultural reserve	731.59	2.96
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)	13,430.39	54.35
Water resources protection area²	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 (6.77 km²) 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 km² of protected area but is contained in the total terrestrial area of 54.35 km².

Note: 1 km² = 247.11 acres

Map 9.1

Terrestrial Protection Areas Including Marine Parks, 2016



0 2.5 5 10 Kilometers

Source: Department of Planning

Legend

Historic Protection Area	Agricultural Reserve	Nature Reserve	Coastal Reserve
Cave Protection Area	Woodland Reserve	Park	Open Space Reserve
	Recreation	Marine Parks	

FORESTRY

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

Forestry

- In 2016 Bermuda's total forest area was 4.16 km². 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 km² (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

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, 2016

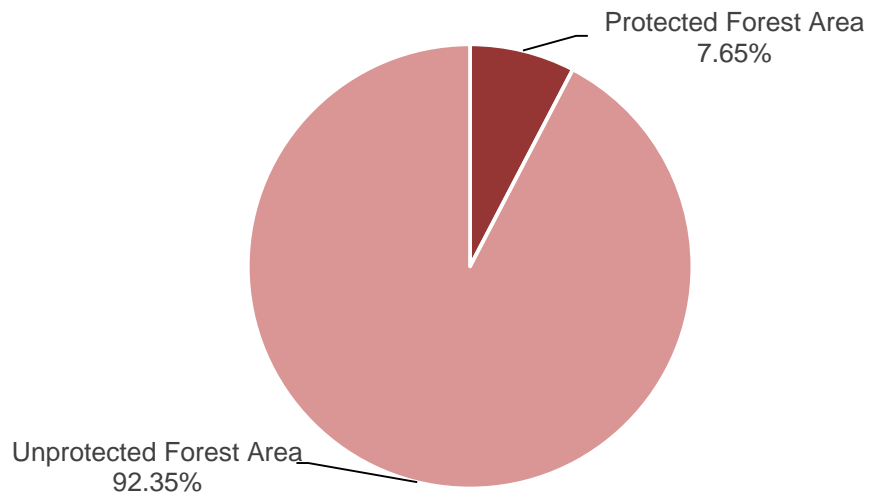
Protected Area Category	Area km ²
Total forest area	4.16 *
Total land area	54.35
Protected forest area as a % of total forest area	100.00
Protected forest area as a % of total land area	7.65

Source: Department of Planning

* This includes woodland reserves.

Chart 10.1

Protected Forest Area as a Percentage of Total Land Area, 2016



Source: Department of Planning

AIR

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

Air Emissions

- In 2016, the highest concentrated pollutant of air emissions from Tynes Bay waste to energy incinerator was NO₂ (274.35 mg/Nm³) (Table 11.1).

Air Concentrations

- Bermuda contains five ambient air monitoring sites that are located across the island (Table 11.2).
- The maximum daily concentrations for the ambient air monitoring sites recorded pollutant concentration levels below Bermuda's limit, except for the pollutants PM₁₀ and TSP (Table 11.3).

Table 11.1**Annual Air Emissions from Tynes Bay Waste to Energy Incinerator, 2012 - 2016**

Pollutant	2012	2013	2014	2015 ¹	2016
VOCs (mg/Nm ³)	2.35	2.32	0.41	0.25	0.43
NO ₂ (mg/Nm ³)	299.50	253.20	258.10	259.30	274.35
SO ₂ (mg/Nm ³)	36.80	38.50	29.00	52.60	36.46
Lead (mg/Nm ³)	0.02	0.02	—	0.09	0.03
Particulate Matter (mg/Nm ³)	1.98	1.88	2.48	11.86	3.90

Source: Department of Environment and Natural Resources

¹ One field of the 3-field Electrostatic Precipitator exhaust abatement system was down during testing.

Note: The data is captured through isokinetic sampling over a two day period each year and is reported normalised to 11% oxygen.

Table 11.2

Average Concentrations for Ambient Air Monitoring Sites, 2014 - 2016

	Pollutants	Units	Bermuda Limit (Clean Air Regulations 1993)	2014					2015					2016				
				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	Prospect	East Broadway	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS
Hourly	NO ₂	µg/m ³	400	9.60	-	20.50	9.80	-	26.60	14.91	17.53	5.99	-	15.79	15.04	15.04	4.88	-
	SO ₂	µg/m ³	450	0.70	-	6.30	16.70	-	7.11	10.79	13.24	17.20	-	9.43	4.45	12.16	9.30	-
	PM ₁₀	µg/m ³	-	-	-	-	-	-	-	29.20	-	-	-	-	28.00	-	-	-
	PM _{2.5}	µg/m ³	-	18.30	-	-	-	-	7.80	-	-	-	-	7.60	-	-	-	-
	TSP	µg/m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Hour	NO ₂	µg/m ³	200	6.90	-	20.50	9.80	-	26.60	14.91	18.10	6.10	-	15.79	15.04	14.99	8.32	-
	SO ₂	µg/m ³	150	0.80	-	6.30	16.70	-	6.84	10.53	13.20	17.20	-	9.43	4.45	12.13	9.28	-
	PM ₁₀	µg/m ³	50	13.80	22.10	13.70	12.10	16.60	22.30	28.80	15.00	23.50	18.40	16.80	31.70	16.73	16.04	26.80
	PM _{2.5}	µg/m ³	-	18.10	-	-	-	-	7.70	-	-	-	-	7.50	-	-	-	-
	TSP	µg/m ³	100	14.40	32.40	20.10	17.40	-	21.20	32.20	29.40	24.20	-	26.80	32.30	43.10	58.90	-
1-year	NO ₂	µg/m ³	60	7.00	-	20.50	9.80	-	28.30	20.19	18.10	6.10	-	15.60	-	15.04	8.41	-
	SO ₂	µg/m ³	30	0.90	-	6.30	16.70	-	6.84	11.05	13.20	17.20	-	9.69	-	12.16	9.30	-
	PM ₁₀	µg/m ³	30	11.90	21.40	13.70	12.10	14.40	18.50	24.30	15.00	23.50	16.00	15.40	29.80	16.75	16.16	24.30
	PM _{2.5}	µg/m ³	-	17.80	-	-	-	-	7.00	-	-	-	-	7.50	-	-	-	-
	TSP	µg/m ³	60	13.00	30.80	20.10	17.40	-	19.10	31.00	29.40	24.20	-	24.20	31.40	43.10	58.90	-

Source: Department of Environment and Natural Resources

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

Table 11.3

Maximum Concentrations for Ambient Air Monitoring Sites, 2014 - 2016

				2014					2015					2016				
Pollutants				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	Prospect	East Broadway	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	BIOS
Hourly	NO ₂	µg/m ³	400	115.60	-	385.00	201.00	-	319.25	73.21	354.30	137.00	-	99.45	100.39	266.32	144.87	-
	SO ₂	µg/m ³	450	31.90	-	94.00	358.00	-	91.32	108.68	385.30	320.70	-	109.25	65.76	244.08	253.02	-
	PM ₁₀	µg/m ³	-	-	-	-	-	-	-	-	-	-	-	-	122.00	76.81	99.74	-
	PM _{2.5}	µg/m ³	-	221.00	-	-	-	-	316.60	-	-	-	-	49.10	-	-	-	-
	TSP	µg/m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Hour	NO ₂	µg/m ³	200	18.40	-	192.00	58.00	-	160.19	42.83	149.50	61.00	-	38.35	46.06	136.42	138.26	-
	SO ₂	µg/m ³	150	9.60	-	48.00	61.00	-	27.11	60.53	136.00	103.00	-	52.92	10.48	91.78	128.29	-
	PM ₁₀	µg/m ³	50	35.30	39.80	48.30	43.20	40.10	113.80	77.00	55.00	91.60	53.10	37.70	98.20	62.37	73.34	60.90
	PM _{2.5}	µg/m ³	-	38.30	-	-	-	-	26.80	-	-	-	-	27.60	-	-	-	-
	TSP	µg/m ³	100	39.90	57.70	55.30	48.70	-	43.70	56.10	96.10	59.30	-	64.00	54.40	130.60	153.10	-
Total number of exceedances of the limits set in the Clean Air Regulations 1993 over each year				0	0	0	0	0	1	10	2	17 *	1	0	3	9	20	2

Source: Department of Environment and Natural Resources

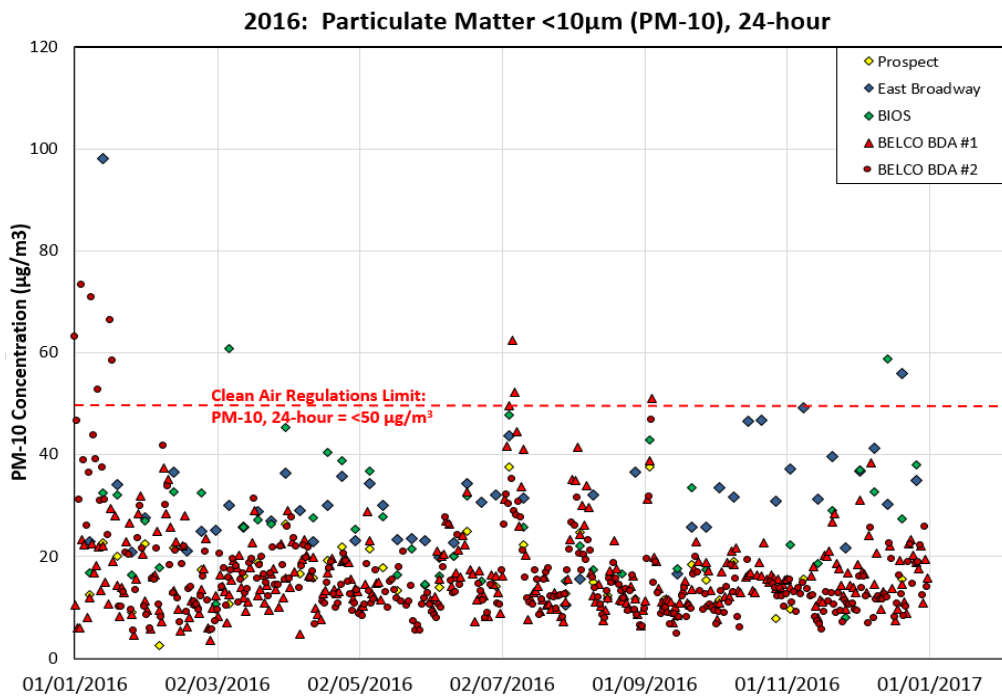
- Not determined as part of the current protocols.

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

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

Figure 11.1

24-hour Average PM₁₀ Concentration, 2016



Source: Department of Environment and Natural Resources

WASTE

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

- In 2016, the amount of waste collected totaled 89,830 tonnes. This represents an increase of 7.47% over the 83,590 tonnes collected in 2015 (Table 12.1).
- In 2016, 1,600 tonnes of waste was recycled, 18,000 tonnes was composted, 60,230 tonnes was incinerated to generate electricity and 10,000 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 600,000 pounds of hazardous waste in 2016 (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

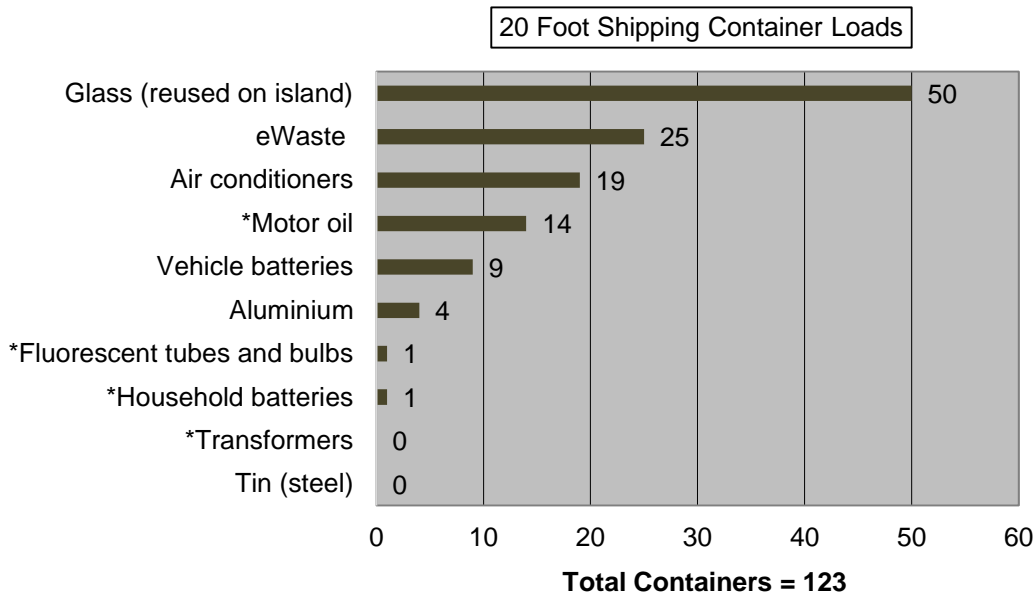
Generation of Waste by Source, 2012 - 2016

Indicator	2012	2013	2014	(1,000 mT)	
				2015	2016
Waste collected from households	27.35	28.21	28.40	27.86	29.94
Waste collected from other origins	54.71	56.43	56.81	55.73	59.89
Total amount of waste collected	82.06	84.64	85.21	83.59	89.83

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

Chart 12.1

Estimated Export of Recyclable Waste, 2016



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 Waste, 2012 - 2016

Indicator	(1,000 mT)				
	2012	2013	2014	2015	2016
Amounts going to:					
Recycling	1.60 e	1.60 e	1.60 e	1.60 e	1.60 e
Composting	15.00 e	15.00 e	18.00 e	18.00 e	18.00 e
Incineration	55.46	58.04	55.61	53.99	60.23
Landfilling	10.00 e	10.00 e	10.00 e	10.00 e	10.00 e
Total amount of waste	82.06	84.64	85.21 r	83.59	89.83

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

Table 12.3**Management of Special Waste, 2012 - 2016**

Indicator	2012	2013	2014	(1,000 lbs)	
				2015 e	2016 e
Stock of hazardous waste at the beginning of the year	98.00	92.00	115.00	88.00	20.60
Hazardous waste generated during the year	570.00	566.00	588.00	601.50	600.00
Hazardous waste exported during the year:					
Recycling	362.00	356.00	376.00	400.80	400.00
Incineration	5.00	8.00	5.00	6.60	10.00
Landfilling	209.00	179.00	234.00	261.50	190.00
Total	576.00	543.00	615.00	668.90	600.00
Stock of hazardous waste at the end of the year	92.00	115.00	88.00	20.60	20.60

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

Table 12.4**Management of Waste by Type, 2010, 2012, 2014 and 2016 ¹**

Indicator	2010	2012 e	2014 e	2016 e
Paper, paperboard	29.00	29.00	29.00	29.00
Textiles	17.00	17.00	17.00	17.00
Plastics	13.00	13.00	13.00	13.00
Glass	9.00	9.00	9.00	9.00
Metals	6.00	6.00	6.00	6.00
Other inorganic material	9.00	9.00	9.00	9.00
Organic material	17.00	17.00	17.00	17.00
Total (%)	100.00	100.00	100.00	100.00

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

¹ Beginning in 2006, the Waste Management Section of the Ministry of Public Works began conducting a waste audit every two years.

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 2016, the total volume of precipitation in Bermuda was 98.81 mio m³ (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

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

Table 13.1

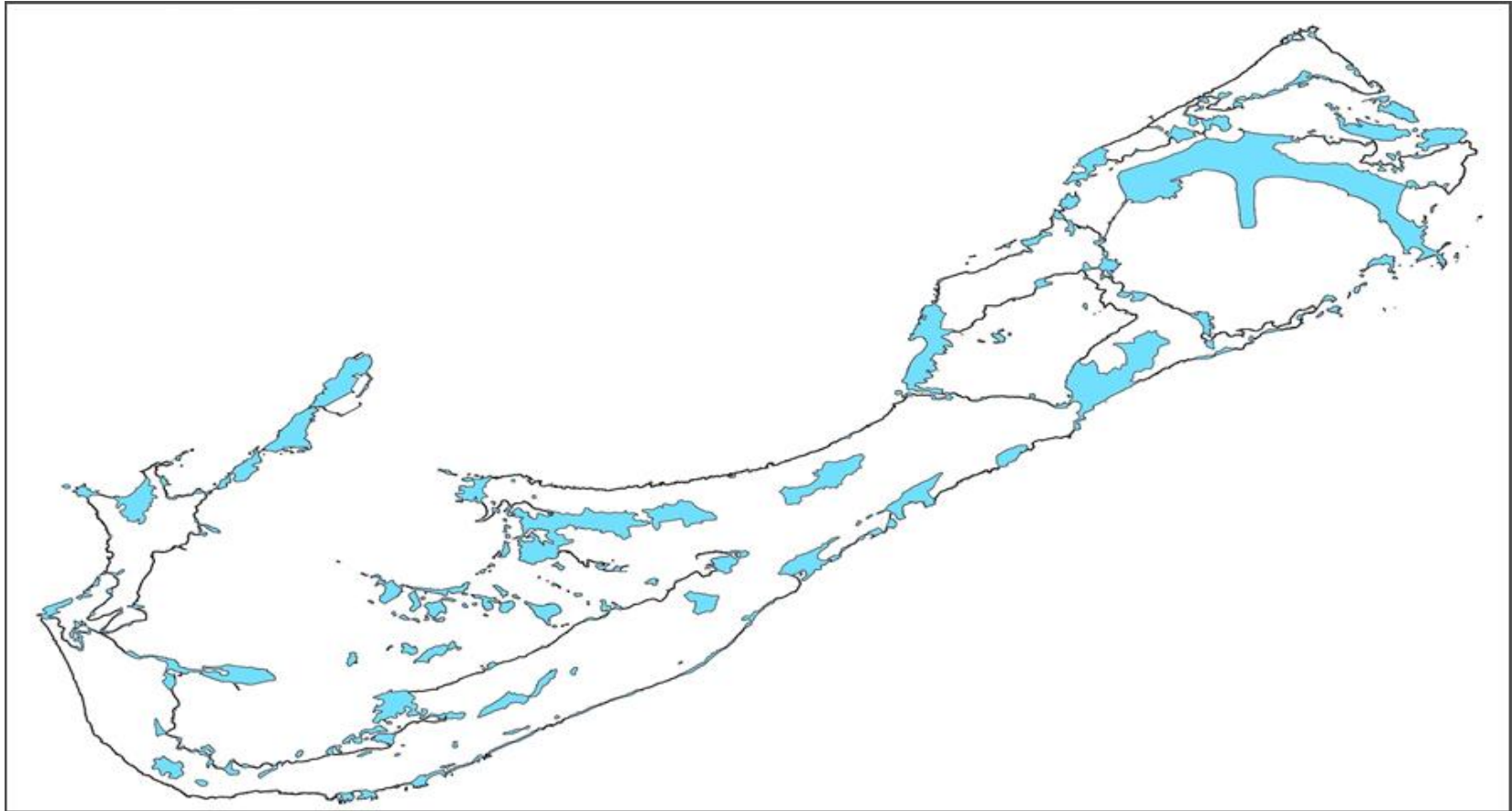
Renewable Freshwater Resources, 2012 - 2016

Category	mio m ³ /y				
	2012	2013	2014	2015	2016
Precipitation	68.01	85.19	94.19	78.36	98.81
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, 2016



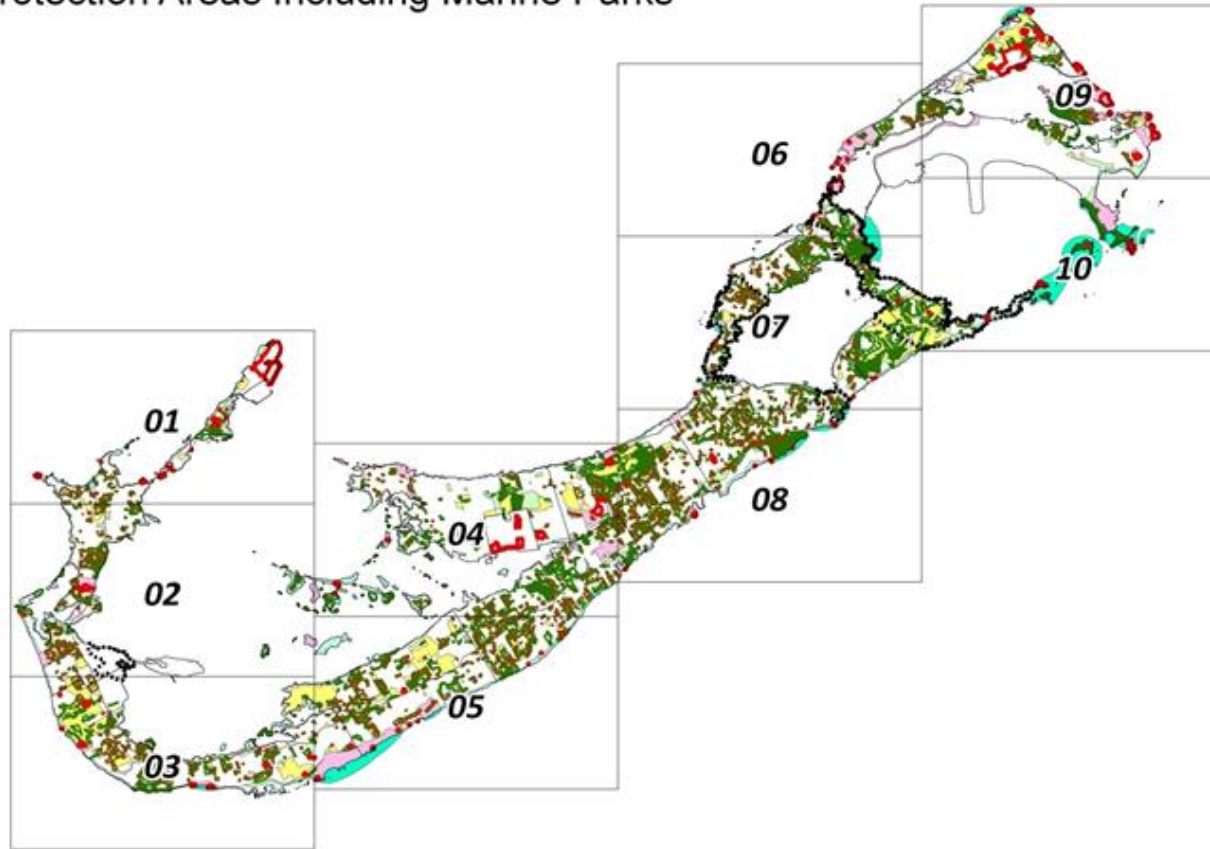
Legend

 Water Resources Protection Area

Source: Department of Planning

ANNEX

Terrestrial Protection Areas Including Marine Parks

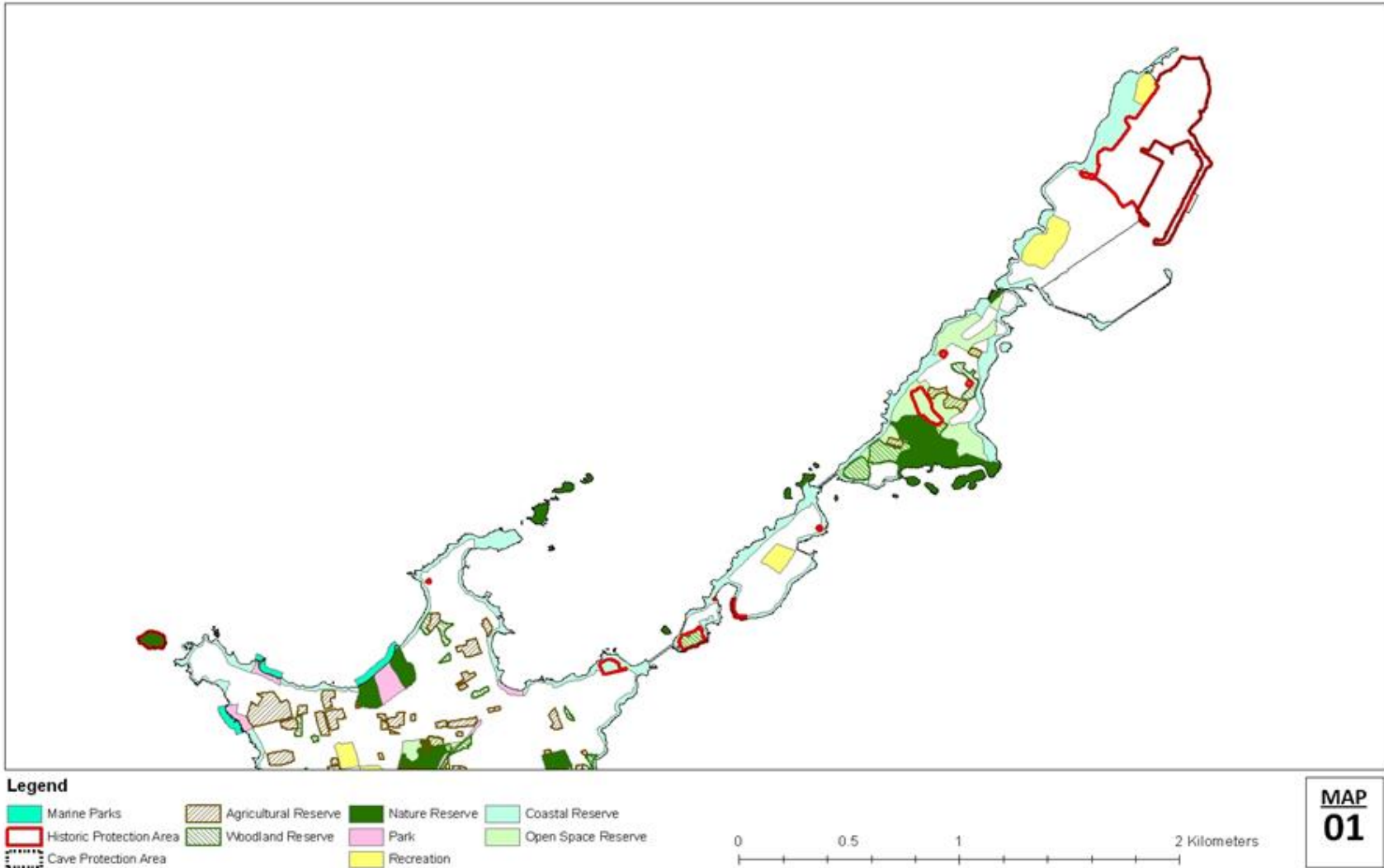


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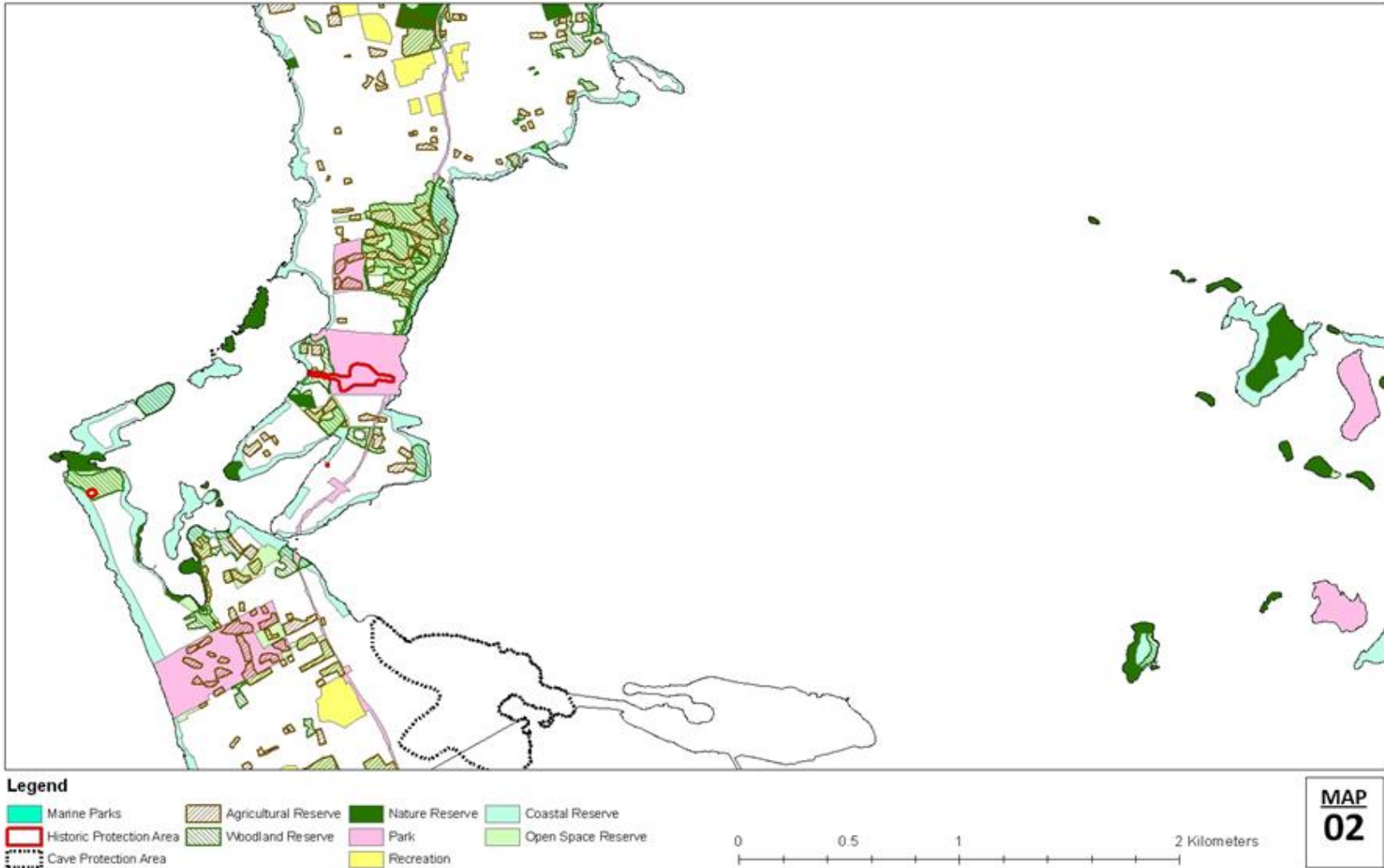
- | | | | |
|--------------------------|----------------------|----------------|--------------------|
| Historic Protection Area | Agricultural Reserve | Nature Reserve | Coastal Reserve |
| Cave Protection Area | Woodland Reserve | Park | Open Space Reserve |
| | Recreation | Marine Parks | |



Source: Department of Planning



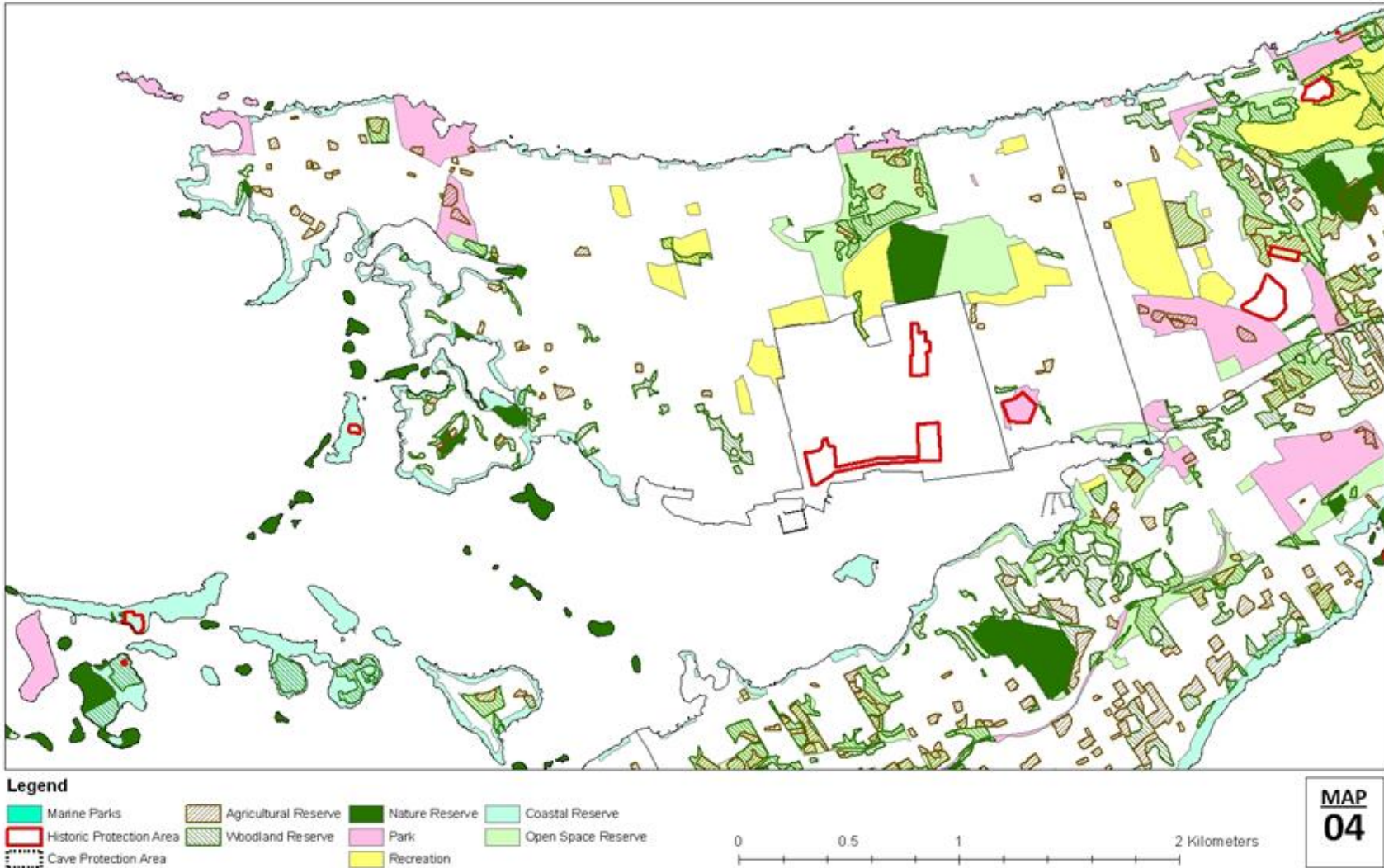
Source: Department of Planning



Source: Department of Planning



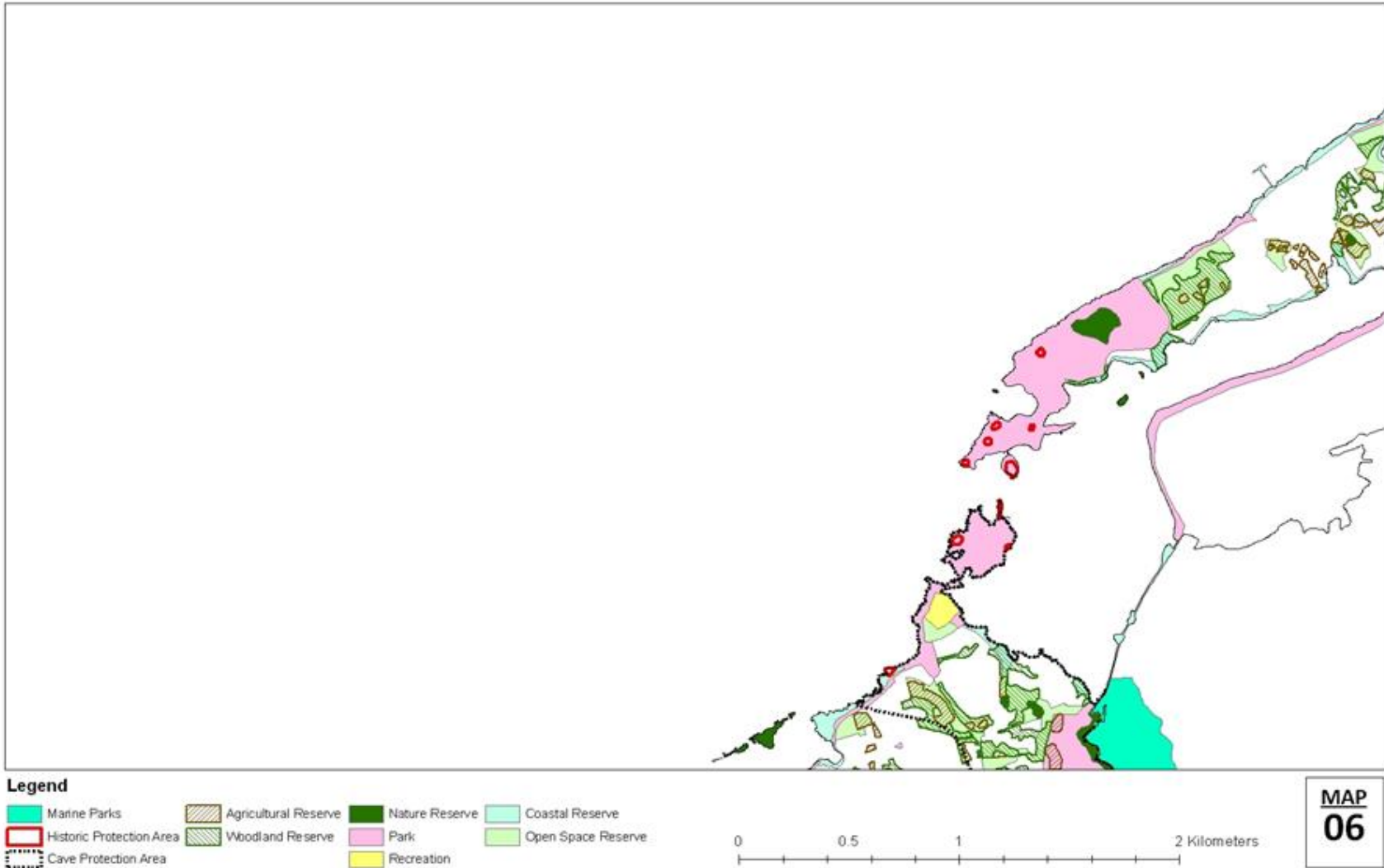
Source: Department of Planning



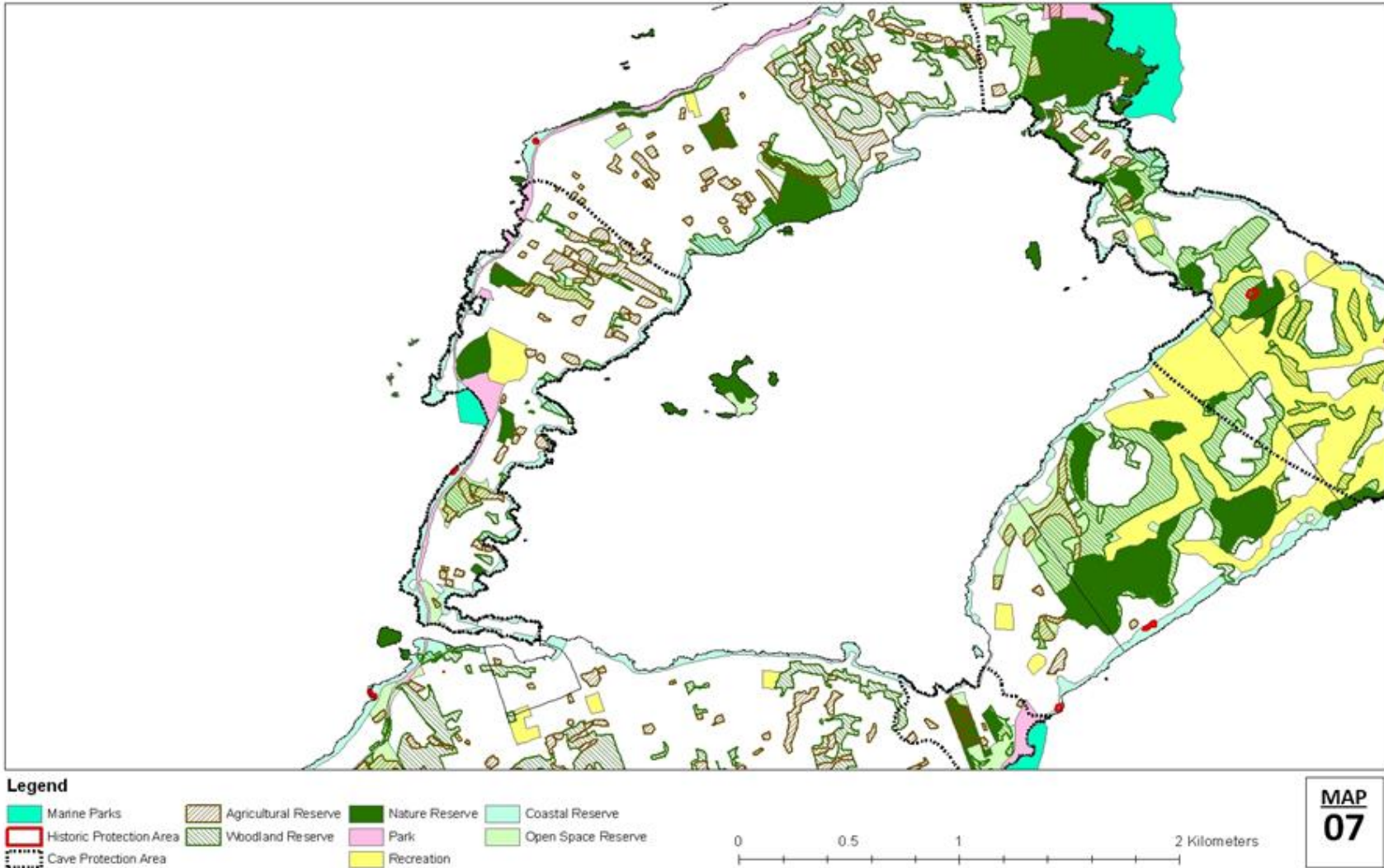
Source: Department of Planning



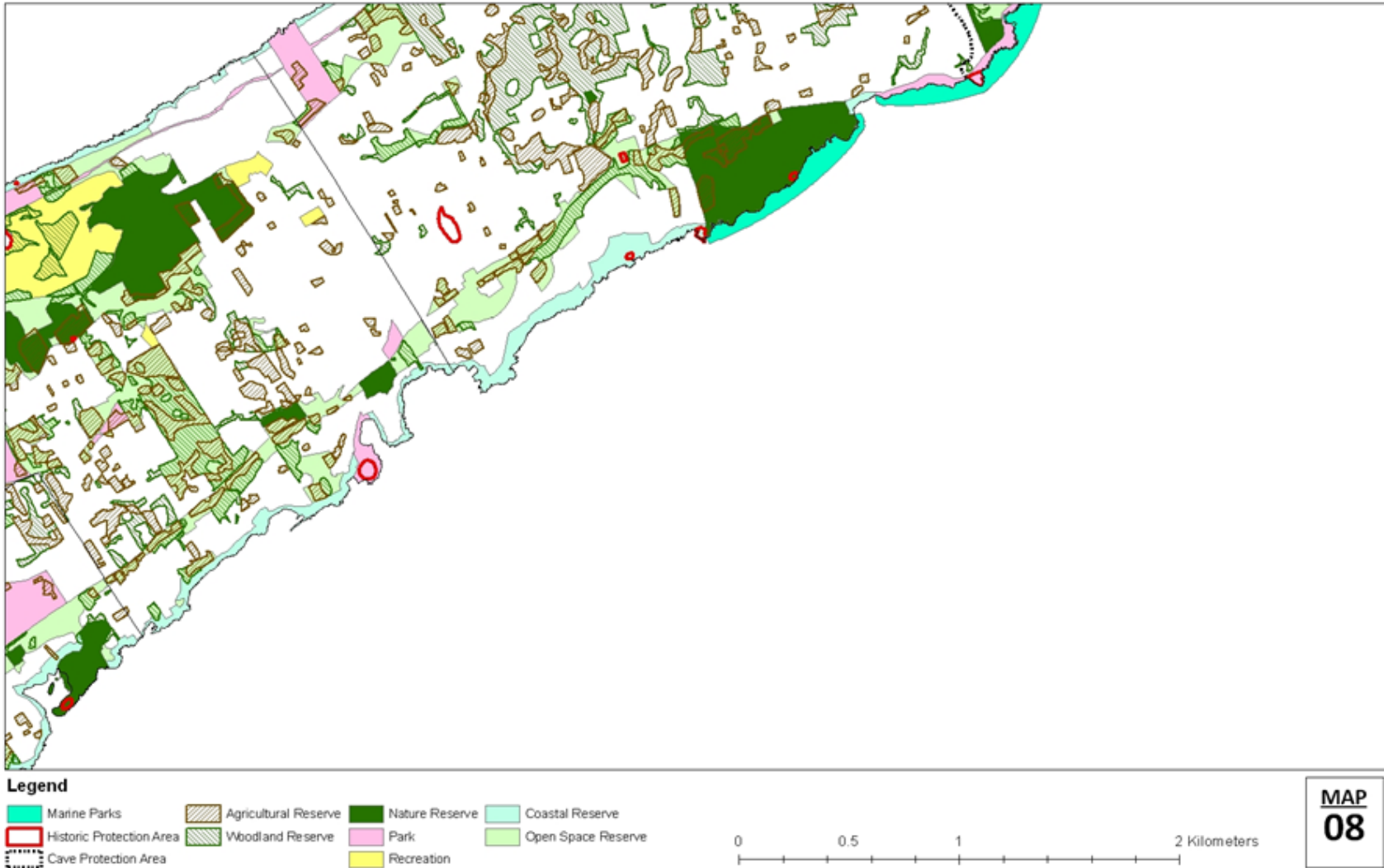
Source: Department of Planning



Source: Department of Planning



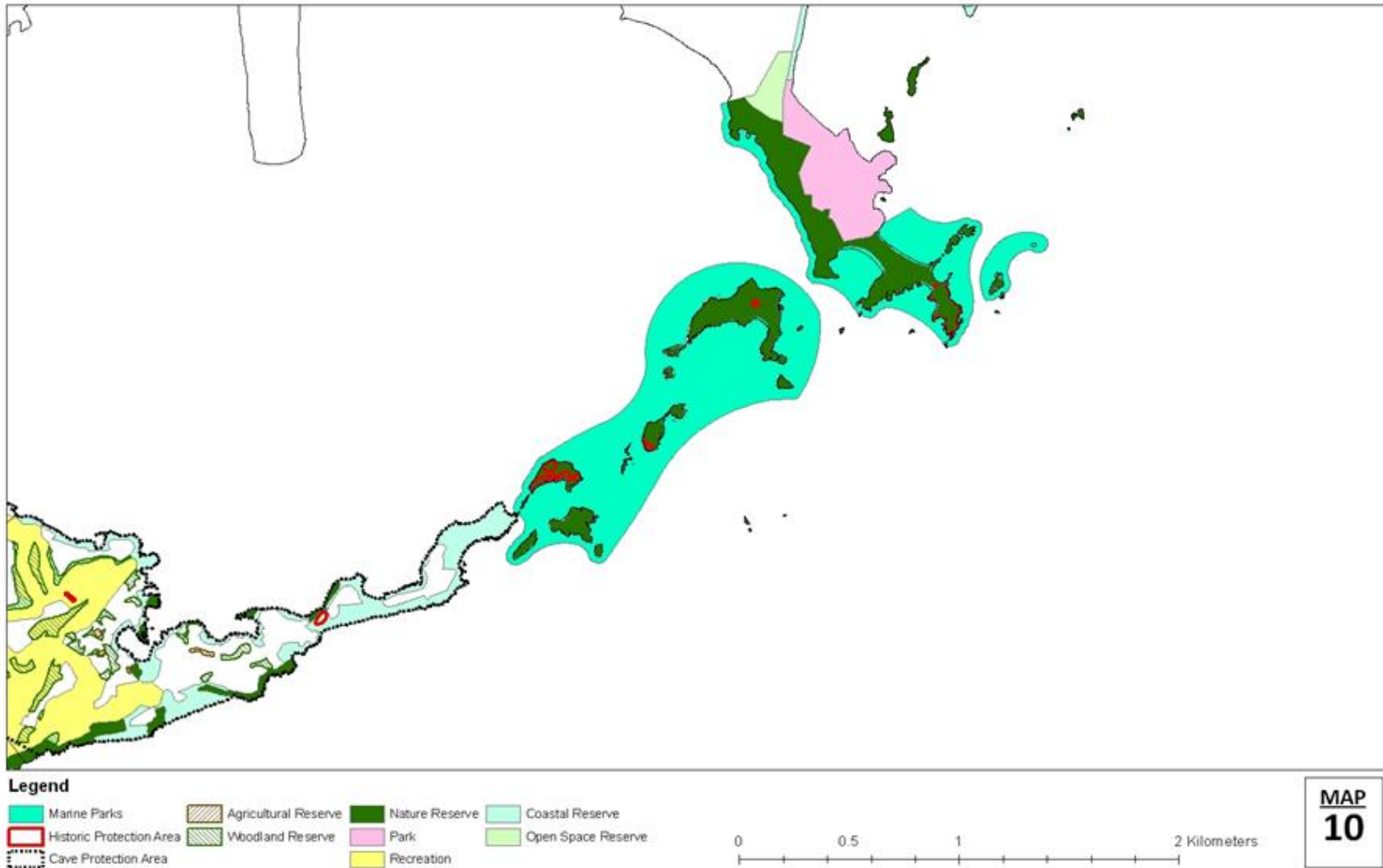
Source: Department of Planning



Source: Department of Planning



Source: Department of Planning



Source: Department of Planning



GOVERNMENT OF BERMUDA

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