



2023 ENVIRONMENTAL STATISTICS COMPENDIUM



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Department of Statistics

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FOREWORD

The Department of Statistics is pleased to release its twelfth issue of the *Environmental Statistics Compendium*. In alignment with the Department's mission to produce and provide statistical information for data-driven decision making for Bermuda, this publication reflects the collation of existing data sourced from stakeholders 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 2018 to 2022.

COVID-19

The Coronavirus disease (COVID-19) pandemic led to restrictions being imposed by Government (e.g. curfews, limited group sizes, reduced business hours and temporary business closures), cancellations (e.g. cruises and flights) and changes in behaviour (e.g. less travelling and eating out) as mitigation efforts to reduce the spread of COVID-19 and minimize the number of deaths. Therefore, readers should take the pandemic into account when interpreting the 2020 to 2022 data.

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

October 2024

EXPLANATORY NOTES

-	Not applicable	km	Kilometer
..	Not available	km ²	Square kilometer
r	Revised figure	kWh	Kilowatt-hour
e	Estimated figure	mio m ³ /y	Million cubic meters per year
—	Nil or negligible	mT	Metric tonnes
'000	Thousands	No.	Number
°	Degrees	µg/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
≡	Axis scale has a discontinuity	mg/nm ³	Milligrams per cubic meter
≈	Approximately equal to	NTR	Note to Reader

Note: In some tables, figures may not add 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 degrees Celsius (°C)	

CONTRIBUTORS

Bermuda Fire and Rescue Services
Bermuda Hospitals Board
Bermuda Tourism Authority
Department of Environmental and Natural Resources, Marine Management Section
Department of Environmental Protection
Department of Health
Department of Planning
Department of Statistics
Department of Works and Engineering - Waste Management Section
Liberty Group Limited
The Bermuda Weather Service
The Royal Gazette
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 2022, the population of Bermuda was projected to be 64,031 persons, a 0.4 per cent increase from the 63,779 persons counted in the 2016 Population and Housing Census (Table 1.1).
- Population projections were used to estimate the population for 2018 to 2022.

HOUSEHOLDS

- In 2016, over one-third (35.4%) of the dwelling units were two-unit dwellings (Table 1.2).
- One-person households accounted for 34.1 per cent of the total households in Bermuda in 2016 (Table 1.3).
- The average size of a household continued to drop from 2.4 persons in 2010 to 2.3 persons in 2016 (Table 1.3).
- The number of non-owner occupied private dwelling units increased by 0.6 percentage points over the six-year period 2010-2016 to 51.6 per cent (Table 1.4).
- In 2016, private dwelling units with two bedrooms accounted for over one-third (36.0%) of households in Bermuda (Table 1.5).
- The average number of persons per bedroom was 1.1 persons in 2016 (Table 1.5).

NOTE TO READER

Group Dwelling Unit: where the occupants live collectively for disciplinary, health, custodial, work or other reasons and share the cooking, sleeping and/or sanitary facilities with other households. Generally, group dwellings are available primarily to selected persons, not the general population. They differ from institutions in that occupants' movements to and from the premises are less restricted. Examples of group dwellings include hotel staff quarters, transitional housing, police barracks and rooming houses catering for six or more paying guests as well as Mid-Atlantic Wellness Institute group homes catering to any number of clients.

Household: a person or group of persons living together in a dwelling unit.

Population Density: a measure of the average non-institutional population per unit of land area. It is calculated by dividing the de jure civilian non-institutional population by the total land area. Bermuda's land area as of 2016 was 53.6 km² or 20.7 square miles (source: Department of Land Title and Registration 26 January, 2018).

$$\text{Population Density} = \frac{\text{De Jure Civilian Non-Institutional Population}}{\text{Total Land Area}}$$

Private Dwelling Unit: a room or group of rooms used, or intended to be used, for living purposes. It must be capable of permanent human habitation and must have its own:

- separate access to the street or common landing or staircase, and,
- cooking, living, sleeping and sanitary facilities which the occupants of the dwelling do not have to share with any persons other than their own household members.

From a structural perspective, a private dwelling may be contained within a one-unit dwelling, a house comprising two or more apartments, an apartment building, or within part of a building which is used for residential as well as business or other purposes.

Source: Department of Statistics

Table 1.1

POPULATION AND POPULATION DENSITY, 2018–2022

Year	Population ¹	Population Density (per km ²) ²
2018	63,973	1,194
2019	64,027	1,195
2020	64,054	1,195
2021	64,055	1,195
2022	64,031	1,195

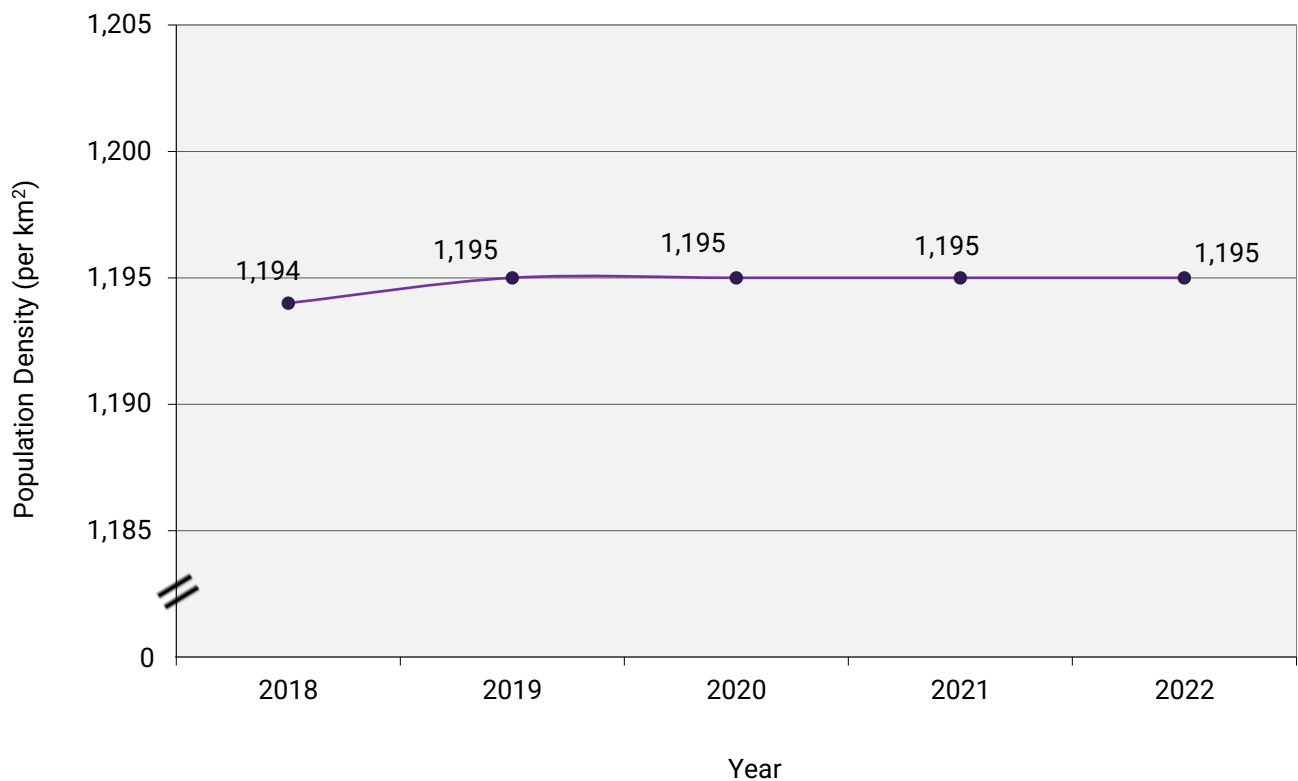
Sources: Department of Statistics and the Land Title and Registration Office

¹ Based on Bermuda's Population Projections 2016-2026.

² Bermuda's land area as of 2016 is 53.6 km² (20.7 square miles).

Chart 1.1

POPULATION DENSITY, 2018–2022¹



Source: Department of Statistics

¹The 2018-2022 figures are based on Bermuda's Population Projections.

Table 1.2

TYPE OF DWELLING UNITS, 2010 AND 2016

Type of Dwelling	Number		Percentage Distribution	
	2010	2016	2010	2016
Total	26,923 ¹	28,192	100.0 ²	100.0
One-unit dwelling	6,280	6,767	24.3	24.0
Two-unit dwelling	8,870	9,972	34.4	35.4
Three-unit dwelling	4,639	4,849	18.0	17.2
Four or more apartments	5,024	5,253	19.5	18.6
Group dwellings	696	751	2.7	2.7
Residential/commercial premises	281	577	1.1	2.0
Other/not stated	27	23	0.1	0.1

Source: 2010 and 2016 Population and Housing Censuses

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

² The denominator for percentage distribution is 25,817 (26,923 - 1,106).

Table 1.3

HOUSEHOLDS BY SIZE OF HOUSEHOLD, 2010 AND 2016

Persons in Household	Number		Percentage Distribution	
	2010	2016	2010	2016
Total	26,923 ¹	28,192	100.0 ²	100.0
Average size of household	2.4	2.3		
One	7,942	9,611	30.8	34.1
Two	7,999	8,841	31.0	31.4
Three	4,515	4,802	17.5	17.0
Four	3,540	3,317	13.7	11.8
Five	1,238	1,141	4.8	4.0
Six	385	329	1.5	1.2
Seven	112	99	0.4	0.4
Eight	52	35	0.2	0.1
More than eight	34	17	0.1	0.1

Source: 2010 and 2016 Population and Housing Censuses

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

² The denominator for percentage distribution is 25,817 (26,923 - 1,106).

Table 1.4

PRIVATE DWELLING UNITS BY TYPE OF TENURE, 2010 AND 2016

Type of Tenure	Number		Percentage Distribution	
	2010	2016	2010	2016
Total	26,200 ¹	27,418	100.0 ²	100.0 ³
Non-owner occupied	12,723	14,140	51.0	51.6
Rented - unfurnished	7,747	8,356	31.0	30.5
Rented - partly/fully furnished	3,972	4,650	15.9	17.0
Rent Free	1,004	1,134	4.0	4.1
Owner-occupied	12,238	13,267	49.0	48.4
Owned without a mortgage	6,417	7,483	25.7	27.3
Owned with a mortgage	5,821	5,784	23.3	21.1
Not Stated	133	11		

Source: 2010 and 2016 Population and Housing Censuses

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

² The denominator for percentage distribution is 24,961 (26,200 - 1,106 - 133).

³ The denominator for percentage distribution is 27,407 (27,418 - 11).

Table 1.5

PRIVATE DWELLING UNITS BY NUMBER OF BEDROOMS, 2010 AND 2016

Type of Household	Number		Percentage Distribution	
	2010	2016	2010	2016
Total	26,200 ¹	27,418	100.0 ⁶	100.0 ⁷
Average number of bedrooms per household	2.1 ²	2.1 ⁴		
Average number of persons per bedroom	1.1 ³	1.1 ⁵		
None (studio)	790	1,145	3.2	4.2
One	6,101	6,469	24.4	23.6
Two	8,944	9,857	35.8	36.0
Three	7,473	7,928	29.9	28.9
Four or more	1,645	2,018	6.6	7.4
Not stated	141	1		

Source: 2010 and 2016 Population and Housing Censuses

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

² The calculation is 53,544 bedrooms ÷ 24,953 households.

³ The calculation is 60,503 persons ÷ 53,544 bedrooms.

⁴ The calculation is 58,604 bedrooms ÷ 27,417 households.

⁵ The calculation is 62,668 persons ÷ 58,604 bedrooms.

⁶ The denominator for percentage distribution is 24,953 (26,200 - 1,106 - 141).

⁷ The denominator for percentage distribution is 27,417 (27,418 - 1).

Table 1.6

PRIVATE DWELLING UNITS BY NUMBER OF FULL BATHROOMS, 2010 AND 2016

Number of Full Bathrooms	Number		Percentage Distribution	
	2010	2016	2010	2016
Total	26,200 ¹	27,418	100.0 ²	100.0 ³
None	41	16	0.2	0.1
One	15,340	16,146	61.5	58.9
Two	7,532	8,550	30.2	31.2
Three or more	2,046	2,705	8.2	9.9
Not stated	135	1		

Source: 2010 and 2016 Population and Housing Censuses

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

² The denominator for percentage distribution is 24,959 (26,200 - 1,106 - 135).

³ The denominator for percentage distribution is 27,417 (27,418 - 1).

TOURISM

Bermuda's tourism industry is the second largest source of foreign exchange revenue to the economy, only following international business.

VISITOR ARRIVALS

- The total number of visitors to Bermuda increased by 535.2 per cent from 86,356 in 2021 to 548,522 in 2022 (Table 2.1).
- Air passenger arrivals increased 102.2 per cent from 2021 to 2022 (Table 2.1).
- Cruise ship passenger arrivals increased 2,735.0 per cent from 14,203 in 2021 to 402,657 in 2022 (Table 2.1).
- In 2022, the average length of stay for air passengers decreased to 6.9 days (Table 2.1).

AIR PASSENGERS

- Air passenger arrivals from the United States increased 83.3 per cent from 2021 to 2022 (Table 2.2).
- In 2022, air passengers from United States accounted for 72.6 per cent (105,910) of the total number of air visitors (Table 2.2).
- Hotels remained the most popular accommodation type as the majority (63.4%) of all air passengers stayed at hotels (Table 2.3).

TOURIST PROPERTIES

- The number of licensed properties in Bermuda increased from 40 in 2021 to 42 in 2022 (Table 2.4).
- The licensed room count increased by 4.5 per cent from 2,203 rooms in 2021 to 2,303 in 2022 (Table 2.4).

SECTION CONT'D.

VISITOR EXPENDITURE

- Visitor expenditure increased between 2021 (\$134.8 million) and 2022 (\$359.0 million), a \$224.2 million increase (Table 2.5).
- In 2022, the number of persons employed in Bermuda's tourism industry increased by 7.2 per cent, totaling 3,297 compared to the previous year. Of the total, 2,048 were males, while 1,249 were females (Table 2.5).

NOTE TO READER

Air Passenger Arrivals: includes all stay-over (overnight) visitors. It does not, however, include cruise passenger and yacht arrivals.

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

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 (53.6 km²).

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.

Tourism Density Ratio (TDR): attempts to show the density of tourist in the country at any one time on average. Its value is limited by the fact that tourists flows are seasonal and tourism activity tends to be concentrated in specific geographical areas. (Caribbean Tourism Organization) Tourism Density Ratio is calculated as:

$$\text{Tourism Density Ratio} = \frac{\text{Number of visitors} * \text{average length of stay}}{\text{land area (53.6 km}^2\text{)} * 365}$$

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

NOTE TO READER CONTINUED

Tourism Intensity Rate (TIR): the indicator “arrivals/population” provides an estimate of tourism intensity in the country of reference. This indicator is calculated by World Tourism Organization (UNWTO) based on the available basic data on inbound and domestic tourism, which can be either the number of visitors or the number of tourists. (UNWTO Methodological Notes to the Tourism Statistics Database at http://cf.cda.unwto.org/sites/all/files/pdf/2015_meth_notes_eng_0.pdf) Tourism Intensity Rate is calculated as:

$$\text{Tourist Intensity Rate} = \frac{\text{Number of visitors/1,000 population}}{\text{land area (53.6 km}^2\text{)}}$$

Tourism Penetration Ratio (TPR): the penetration ratio quantifies the average number of tourist arrivals by air, per thousand local inhabitants, in the country at any one time. (modified Caribbean Tourism Organization definition) Tourist Penetration Ratio is calculated as:

$$\text{Tourism Penetration Ratio} = \frac{\text{Average length of Stay * number of air visitors * 1,000}}{365 * \text{mid-year population estimates}}$$

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.

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 RATE AND PENETRATION RATIO, 2018–2022

Indicator	Year				
	2018	2019	2020	2021	2022
Total visitors ¹	766,226	805,039	51,437	86,356	548,522
Percentage change (%)	+11.4	+5.1	-93.6	+67.9	+535.2
Air passengers	281,887	269,478	42,071	72,153	145,865
Percentage change (%)	+4.6	-4.4	-84.4	+71.5	+102.2
Average length of stay for air passengers	5.9	6.0	9.9	9.0	6.9
Air passengers to residents ratio	4.4	4.2	0.7	1.1	2.3
Tourism density ratio	85.1	82.7	21.3	33.2	51.5
Cruise ship passengers	484,339	535,561	9,366	14,203	402,657
Percentage change (%)	+15.9	+10.6	-98.3	+51.6	+2,735.0
Cruise ship passengers to residents ratio	7.6	8.4	0.1	0.2	6.3
Cruise ship arrivals	171	181	4	22	164
Percentage change (%)	+6.2	+5.8	-97.8	+450.0	+645.50
Population ²	63,973	64,027	64,054	64,055	64,031
Visitors to residents ratio	12.0	12.6	0.8	1.3	8.6
Land area (km ²) ³	53.6	53.6	53.6	53.6	53.6
Tourism intensity rate	233.6	234.8	15.0	25.2	159.9
Tourism penetration ratio	71.2	69.2	17.8	27.8	43.1

Sources: Bermuda Tourism Authority, Department of Statistics, Department of Planning and the Land Title and Registration Office.

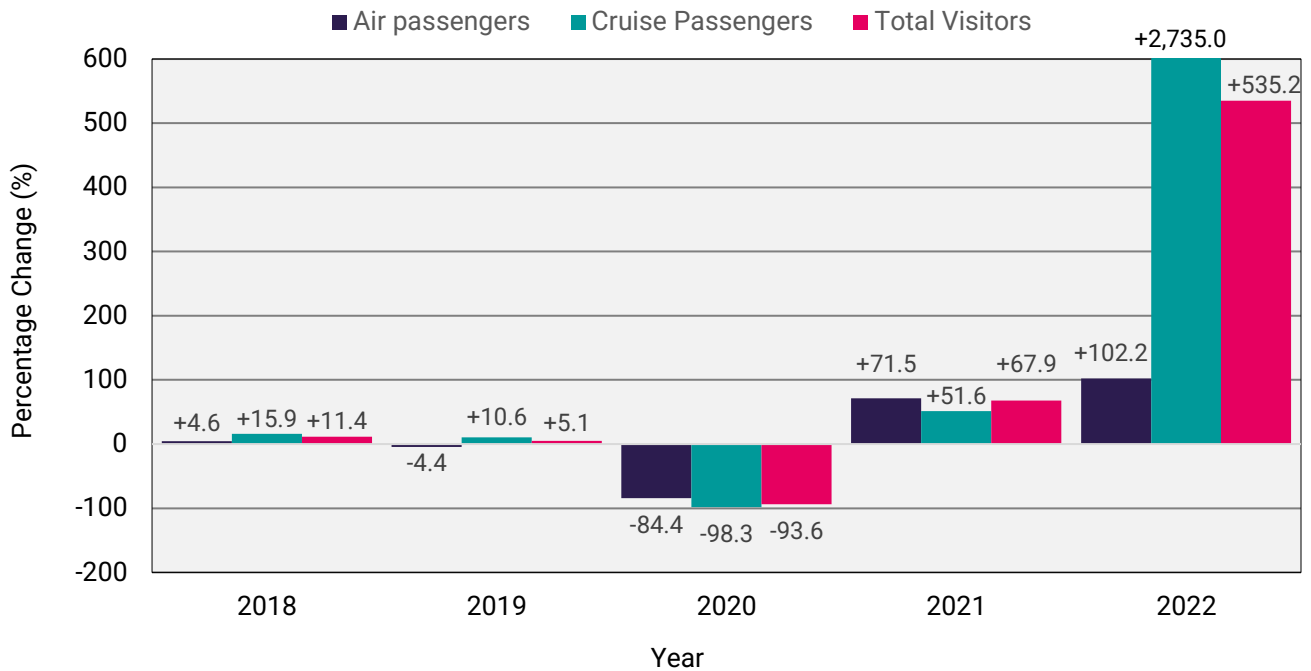
¹ Does not include yacht passengers.

² Bermuda's Population Projections 2016-2026.

³ Bermuda's land area as of 2016 was 53.6 km² (20.7 square miles).

Chart 2.1

GROWTH IN AIR PASSENGERS, CRUISE SHIP PASSENGERS AND TOTAL VISITORS, 2018-2022

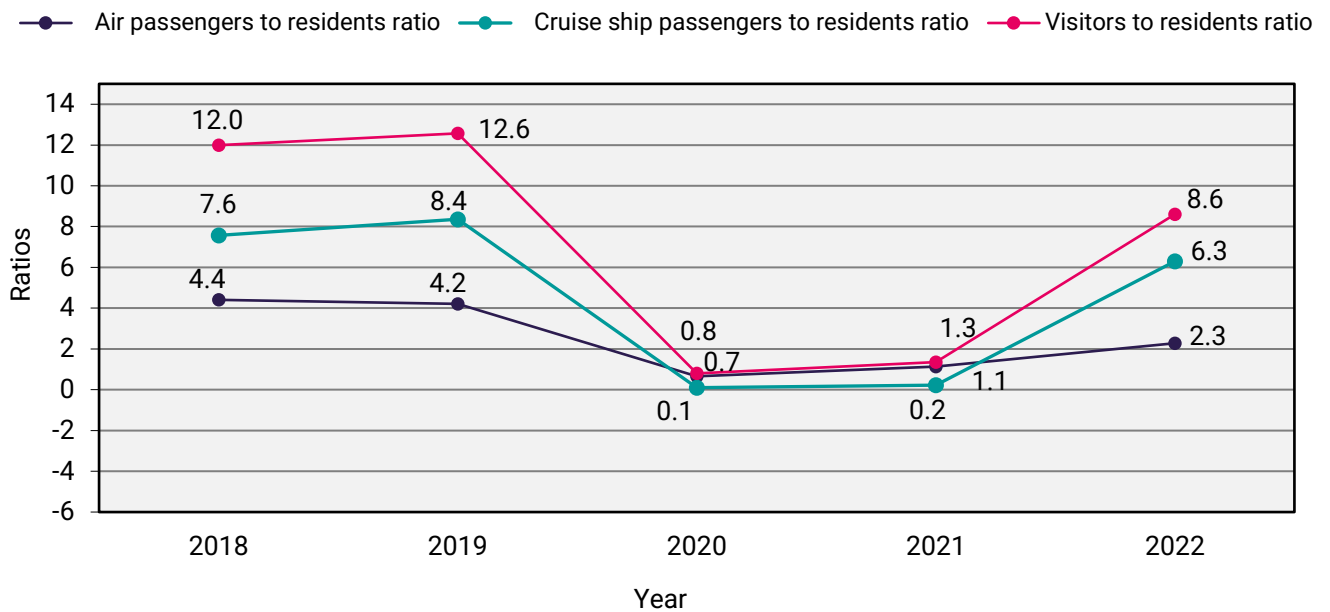


Sources: Bermuda Tourism Authority and Department of Statistics

Note: The significant increase in cruise ship passenger percentage in 2022 (+2,735%) is due to the impact of COVID-19 restrictions, which limited cruise ship arrivals in 2020 and 2021. This value exceeds the graph's scale, which is capped at 600%.

Chart 2.2

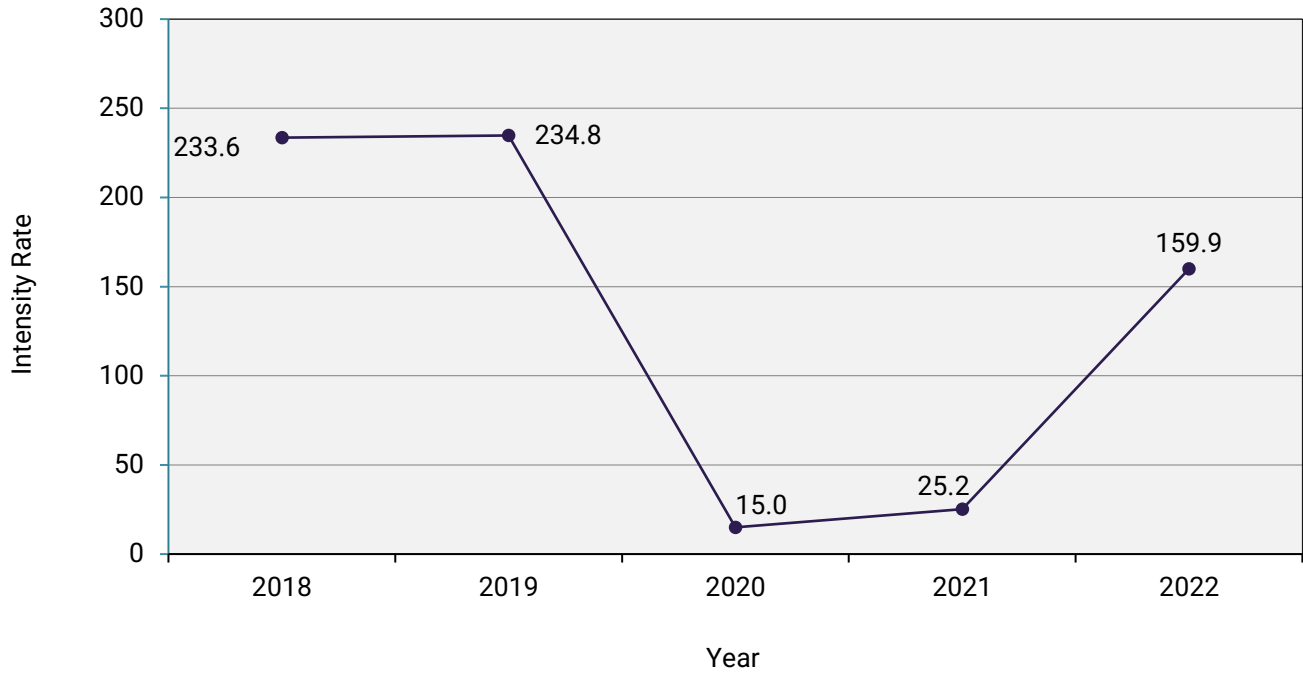
AIR PASSENGERS TO RESIDENTS, CRUISE SHIP PASSENGERS TO RESIDENTS AND VISITORS TO RESIDENTS RATIOS, 2018-2022



Sources: Bermuda Tourism Authority and Department of Statistics

Chart 2.3

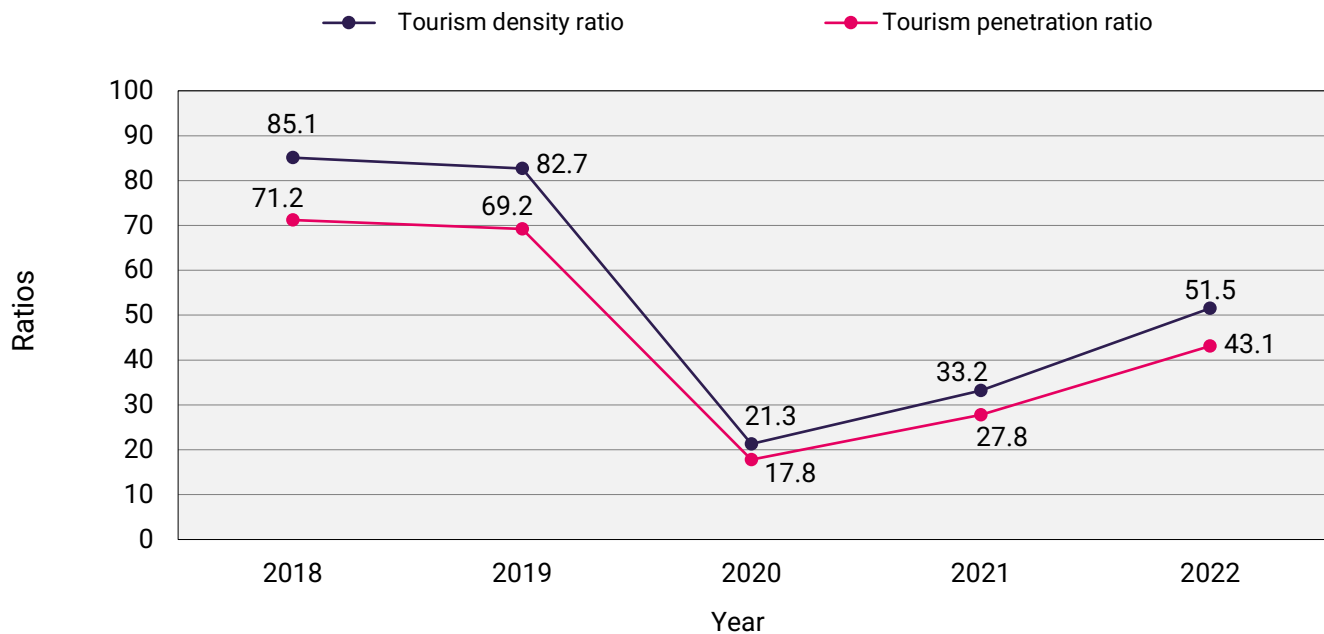
TOURISM INTENSITY RATE, 2018-2022



Sources: Bermuda Tourism Authority and Department of Statistics

Chart 2.4

TOURISM DENSITY AND PENETRATION RATIOS, 2018-2022



Sources: Bermuda Tourism Authority and Department of Statistics

Table 2.2

AIR PASSENGER ARRIVALS BY COUNTRY OF ORIGIN, 2018–2022

Country of Origin	Year				
	2018	2019	2020	2021	2022
Total	281,887	269,478	42,071	72,153	145,865
United States	214,499	202,460	28,183	57,770	105,910
Canada	27,637	27,748	4,936	3,514	12,798
United Kingdom	20,955	21,641	5,955	7,274	16,325
Other	18,796	17,629	2,997	3,595	10,832

Source: Bermuda Tourism Authority

Table 2.3

AIR PASSENGERS BY INTENDED TYPE OF ACCOMMODATION, 2018–2022

Type of Accommodation	Year				
	2018	2019	2020	2021	2022
Total	281,887	269,478	42,071	72,153	145,865
Commercial properties	203,754	194,132	27,398	43,745	98,783
Hotels or similar accommodations ¹	192,963	182,388	25,413	40,851	92,492
Bed and Breakfast/Guest House ²	10,791	11,744	1,985	2,894	6,291
Residential homes	74,392	71,418	13,171	19,966	39,177
Friends and relatives	38,002	35,978	6,433	8,979	19,393
Rental house or apartment	31,383	26,995	4,119	6,276	12,097
Private homes	5,007	8,445	2,619	4,711	7,687
Other ³	3,741	3,928	1,502	8,442	7,905

Source: Bermuda Tourism Authority

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

²Includes housekeeping accommodations.

³Includes not stated.

Table 2.4

NUMBER OF LICENCED PROPERTIES¹, HOTEL OCCUPANCY LICENCED ROOM COUNT PER KM², 2018–2022

Item	Year				
	2018	2019	2020	2021	2022
Number of licenced properties ²	41	41	41	40	42
Licensed room count ³	2,405	2,407	2,434	2,203	2,303
Hotel Occupancy (%) ⁴	63.7	61.0	24.1	37.1	53.4
Number of rooms per km ²	44.9 ⁵	44.9 ⁵	45.4 ⁵	41.1 ⁵	43.0 ⁵

Sources: Bermuda Tourism Authority, Department of Planning and the Land Title and Registration Office

¹ The format for this table changed in 2022.

² Average number of licensed properties for the calendar year January to December.

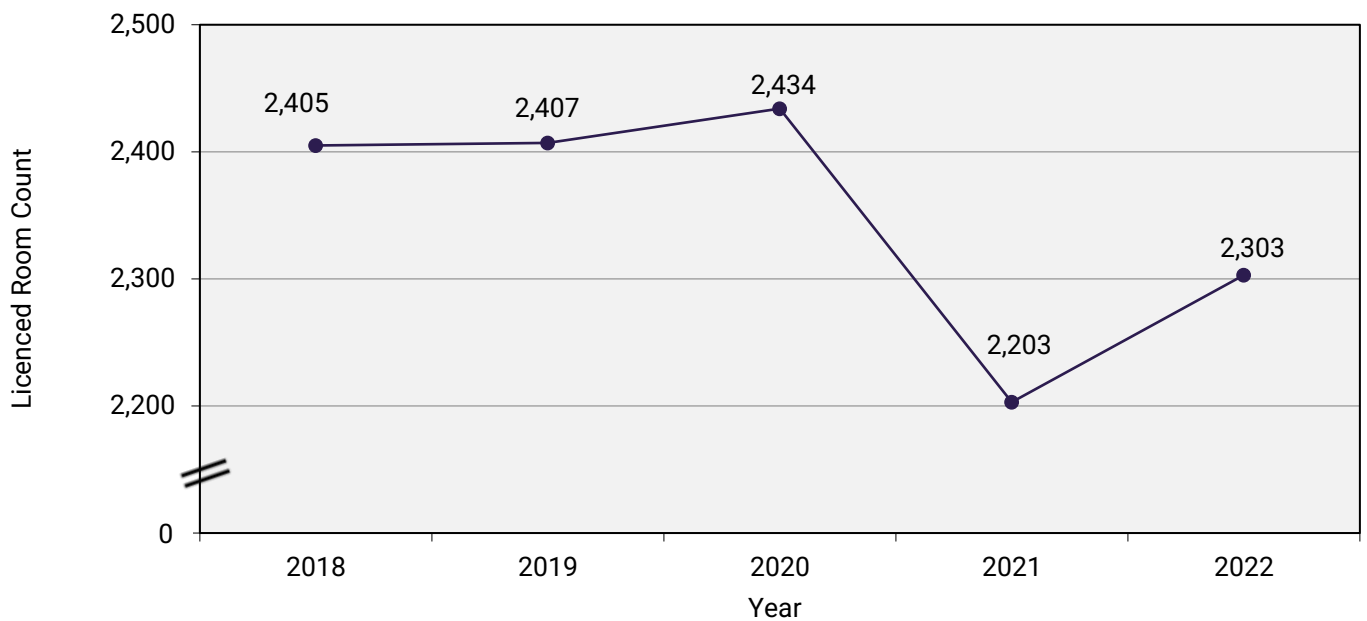
³ Average number of licensed room count for the calendar year January to December.

⁴ Average occupancy for the calendar year January to December.

⁵ Bermuda's land area as of 2016 was 53.6 km² (20.7 square miles).

Chart 2.5

LICENSED ROOM COUNT¹, 2018–2022

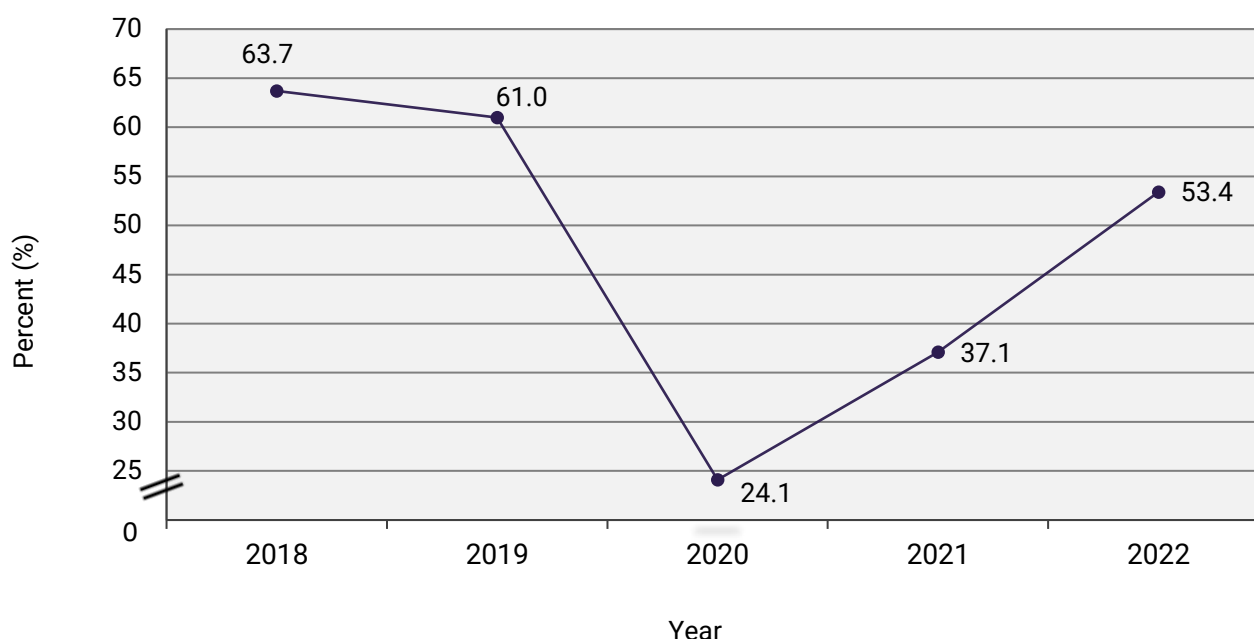


Source: Bermuda Tourism Authority

¹ Average number of licensed room count for the calendar year January to December.

Chart 2.6

HOTEL OCCUPANCY¹, 2018–2022



Source: Bermuda Tourism Authority

¹Average occupancy for the calendar year January to December.

Table 2.5

VISITOR EXPENDITURE AND NUMBER OF EMPLOYEES IN TOURISM, 2018–2022

Item	Year				
	2018	2019	2020	2021	2022
Visitor expenditure (in US\$'000) ¹	544,180	556,520	71,200	134,785	358,976
Expenditure on same-day visits	130,670	141,740	2,100	4,971	99,931
Expenditure on accommodation, meals and drinks, shopping, entertainment, etc.	413,510	414,780	69,100	129,814	259,045
Number of employees in tourism ²					
Total	4,546	4,691	3,591	3,076	3,297
Male	2,785	2,849	2,161	1,909	2,048
Female	1,761	1,842	1,430	1,167	1,249

Sources: Bermuda Tourism Authority and Department of Statistics

¹ The format for this table changed in 2022.

² Includes hotels, restaurants, cafés and bars.

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

- From 2018 to 2021, Bermuda saw a significant decline in reported environmentally-related diseases, dropping from a peak of 5,071 cases in 2019 to 2,466 in 2021. This reduction is likely linked to the impact of COVID-19 health measures, including lockdowns, improved hygiene practices, social distancing, and reduced exposure to environmental factors (Table 3.1).

WEATHER

- Total rainfall in Bermuda decreased by 4.7 per cent over the period 2021 to 2022 (Table 3.2).
- In 2022, January had the most rain days (23) while the least rain days (9) was recorded in July (Table 3.2).
- During 2022, August had the highest mean air temperatures with an average daily air temperature of 83.0°F. The lowest mean daily air temperature during the same year was recorded in January (65.8°F) (Table 3.3). The highest temperature recorded in 2022 was 89.8°F (August), while the lowest temperature recorded was 52.5°F (February).
- In 2022, May had the highest average relative humidity (84.8%), while the lowest was recorded in March and December (73.4%). The average relative humidity for the five-year period, 2018 to 2022, was 76.1 per cent (Table 3.4). The lowest humidity recorded in 2022 was 37.0 per cent (April).
- August had the highest mean sea surface temperature during 2022, with an average daily sea surface temperature of 86.1°F. The lowest mean sea surface temperature during the same year was recorded in January (67.3°F) (Table 3.5). The highest sea surface temperature recorded in 2022 was 86.9°F (August and September), while the lowest sea surface temperature recorded was 64.4°F (February).

SECTION CONT'D.

- In 2022, the month with the most sunlight (293.5 hours) was August while the least amount of sunlight (140.4 hours) was recorded in December (Table 3.6).
- January had the highest daily average wind speed during 2022, with an average wind speed of 21.5 knots (Table 3.7). The lowest daily average wind speed (13.5 knots) was recorded in July. The highest peak wind speed recorded in 2022 was 81.0 knots in September.

Table 3.1

REPORTED CASES OF ENVIRONMENTALLY-RELATED DISEASES BY SEX, 2018-2022

Cause	Sex	Year				
		2018	2019	2020	2021	2022
Gastroenteritis ^{1,2}	Total	529	467	130	108	..
	Male	234	194	58	44	..
	Female	295	273	72	64	..
Malaria (imported)	Total	3	1	—	—	..
	Male	3	1	—	—	..
	Female	—	—	—	—	..
Dengue (imported)	Total	—	2	—	—	..
	Male	—	1	—	—	..
	Female	—	1	—	—	..
Accidental pesticide	Total	4	1	—	3	..
	Male	3	1	—	1	..
	Female	1	—	—	2	..
Poisoning	Total	66	75	142	175	..
	Male	34	34	69	84	..
	Female	32	41	73	91	..
Diarrhea	Total	133	169	98	100	..
	Male	49	76	47	36	..
	Female	84	93	51	64	..
Respiratory diseases (all) ³	Total	4,833	5,071	2,548	2,466	..
	Male	2,133	2,236	1,096	1,190	..
	Female	2,700	2,835	1,452	1,276	..
Acute bronchitis	Total	420	546	170	107	..
	Male	169	218	74	45	..
	Female	251	328	96	62	..
Chronic sinusitis	Total	113	29	10	4	..
	Male	40	10	2	4	..
	Female	73	19	8	—	..
Other	Total	4,300	4,496	2,368	2,355	..
	Male	1,924	2,008	1,020	1,141	..
	Female	2,376	2,488	1,348	1,214	..
TOTAL CASES, all causes	Total	5,568	5,786	2,918	2,852	..
	Male	2,456	2,543	1,270	1,355	..
	Female	3,112	3,243	1,648	1,497	..
Percentage change (%)	Total	+5.7	+3.9	-47.6	-2.3	..
	Male	+7.1	+3.5	-48.3	+6.7	..
	Female	+4.6	+4.2	-47.0	-9.2	..

Sources: Department of Health and Bermuda Hospitals Board

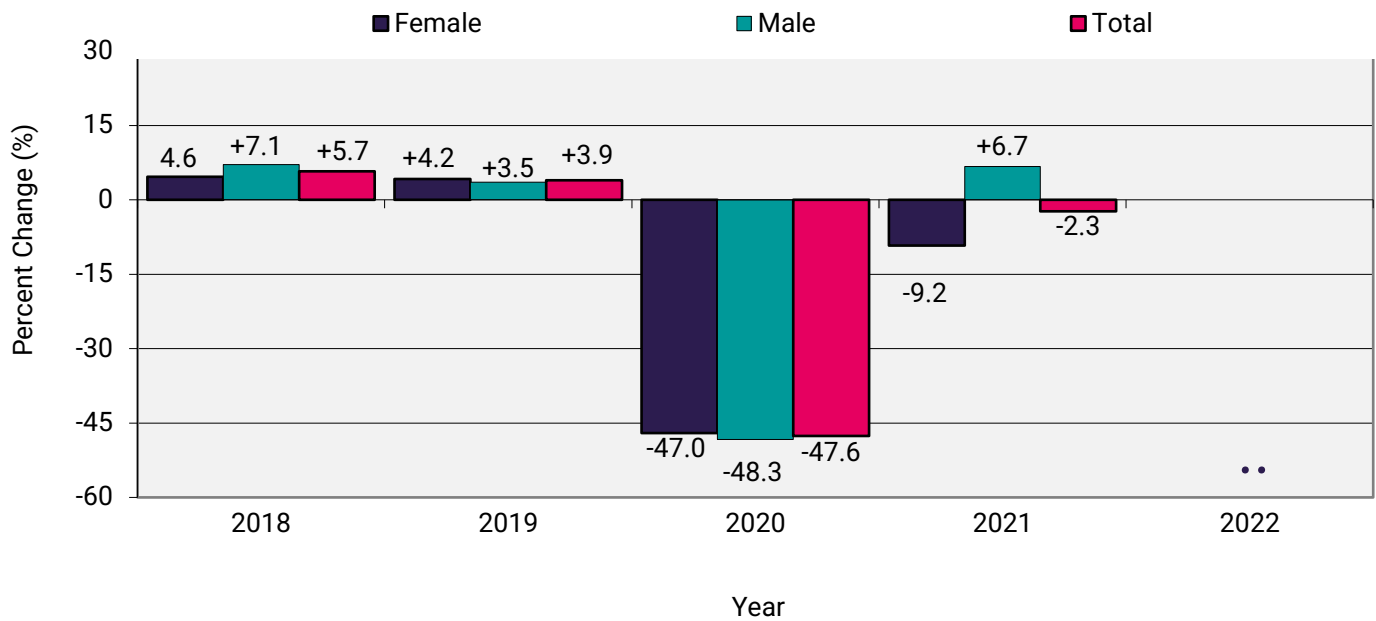
¹ Includes inpatient discharges and emergency encounters.

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

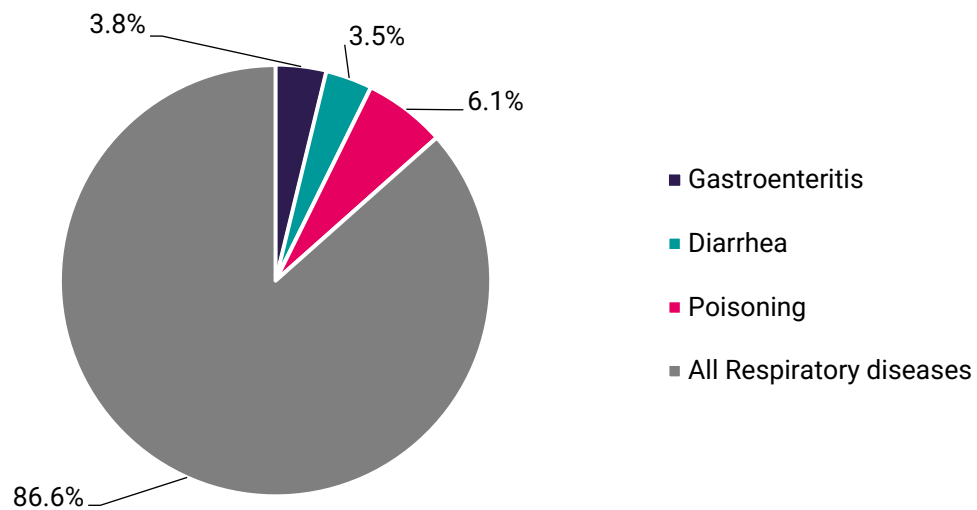
PERCENTAGE CHANGE IN REPORTED CASES OF ENVIRONMENTALLY-RELATED DISEASES BY SEX AND TOTAL, 2018-2022



Sources: Department of Health and Bermuda Hospitals Board

Chart 3.2

REPORTED CASES OF ENVIRONMENTALLY-RELATED DISEASES BY CAUSE, 2021¹



Sources: Department of Health and Bermuda Hospitals Board

¹ Excludes Malaria, Dengue and Accidental pesticides

Table 3.2

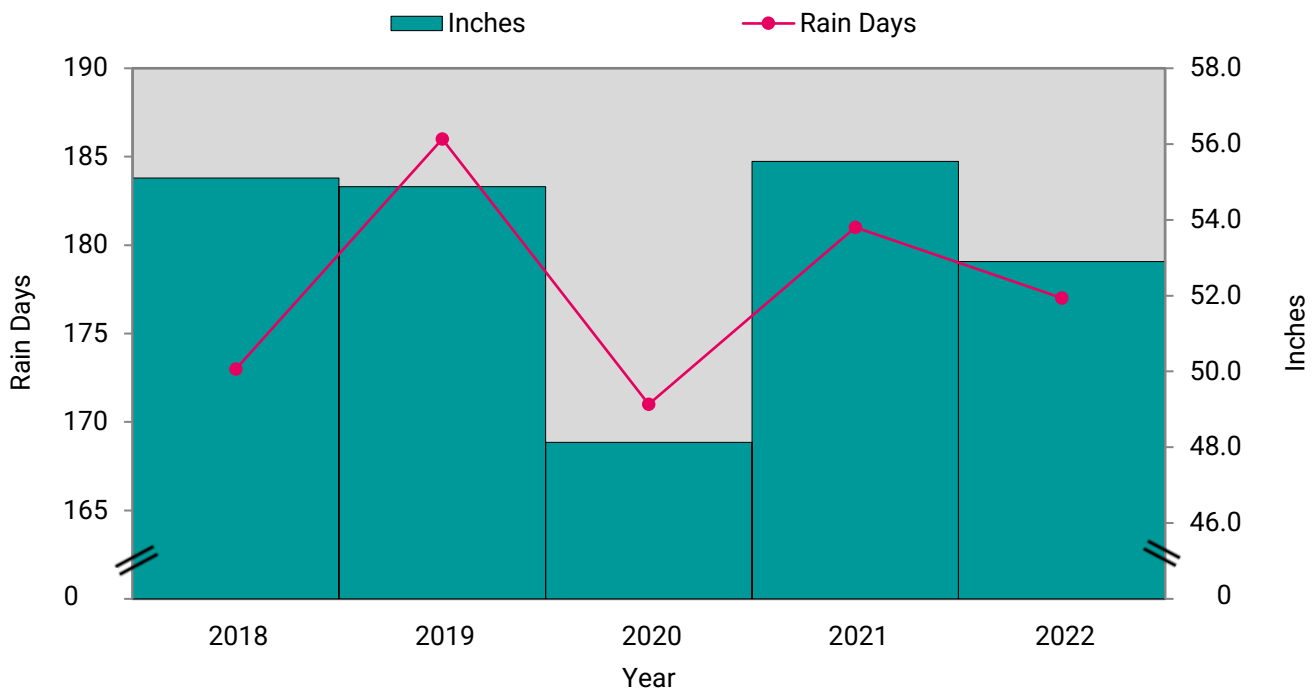
TOTAL NUMBER OF INCHES OF RAINFALL AND RAIN DAYS, 2018–2022

Year		Month												Total
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
2018	Inches	3.8	2.9	7.6	3.6	2.7	5.8	3.7	3.2	6.8	3.3	8.2	3.5	55.1
	Rain Days	16	12	20	12	6	16	16	14	15	12	19	15	173
	Largest Daily Total	1.0	1.3	4.2	1.9	1.1	2.0	0.9	1.6	2.2	1.1	1.6	0.9	
2019	Inches	7.0	4.9	9.0	1.6	3.0	4.2	2.8	7.6	4.2	1.1	4.8	4.8	54.9
	Rain Days	20	15	16	8	11	18	12	21	15	11	19	20	186
	Largest Daily Total	2.6	1.7	1.8	0.5	1.3	1.2	1.2	1.6	1.5	0.4	1.9	0.8	
2020	Inches	4.4	5.3	2.1	3.2	5.0	4.8	1.8	5.0	5.3	1.9	6.5	2.8	48.1
	Rain Days	17	16	12	17	13	11	9	17	12	16	16	15	171
	Largest Daily Total	1.5	1.9	0.4	0.8	1.7	1.8	0.9	1.5	2.0	0.5	3.6	0.9	
2021	Inches	7.9	3.6	6.4	4.2	5.1	1.7	5.1	2.2	5.3	4.4	6.9	2.7	55.5
	Rain Days	21	10	22	18	13	9	16	14	17	15	14	12	181
	Largest Daily Total	2.5	2.0	1.2	2.0	3.8	0.9	2.2	0.7	1.3	1.9	1.7	0.7	
2022	Inches	6.2	2.4	3.2	3.8	3.5	3.7	1.0	6.0	2.8	10.0	5.2	5.1	52.9
	Rain Days	23	17	10	13	12	10	9	12	15	17	19	20	177
	Largest Daily Total	1.8	0.4	1.2	1.2	1.2	0.9	0.7	3.5	0.6	4.3	1.6	5.1	

Source: The Bermuda Weather Service

Chart 3.3

TOTAL NUMBER OF INCHES OF RAINFALL AND RAIN DAYS, 2018–2022



Source: The Bermuda Weather Service

Table 3.3

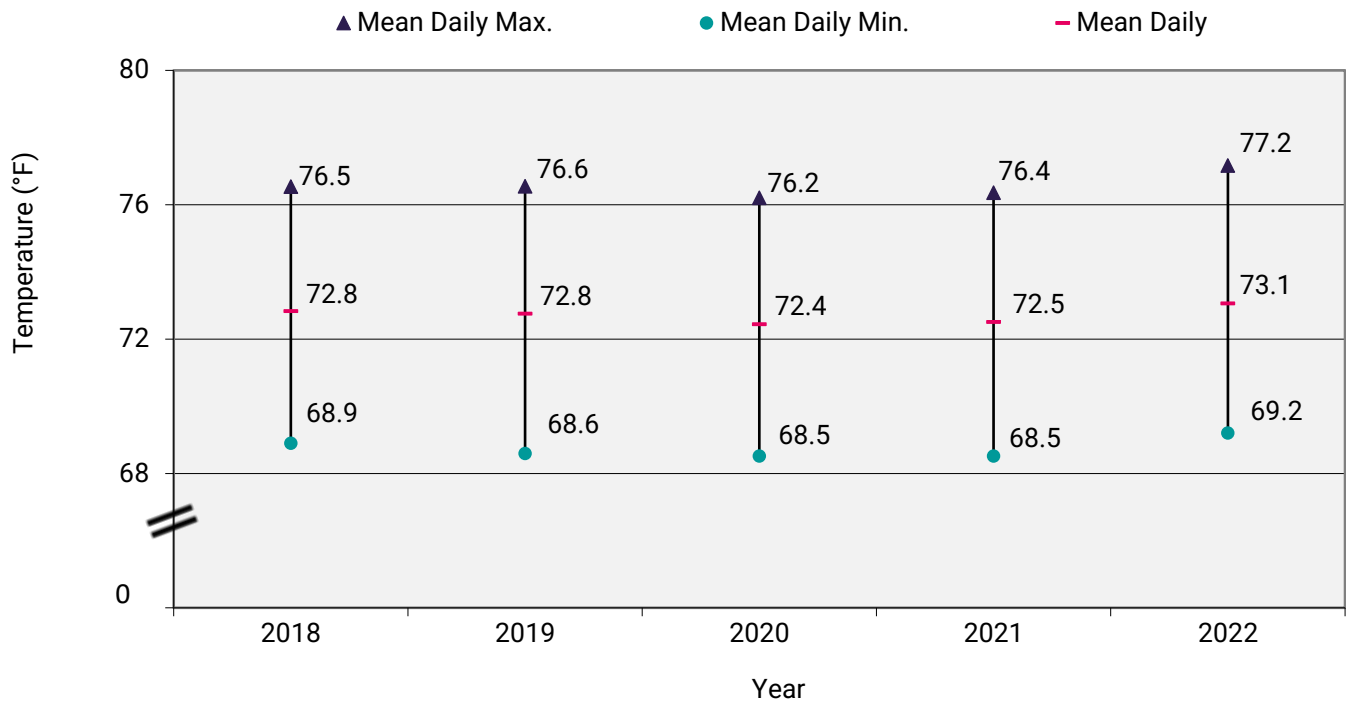
MEAN DAILY MAXIMUM, MINIMUM AND DAILY AIR TEMPERATURE, 2018–2022

Year		Month												(°F) Yearly Average
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
2018	Mean Daily Max.	68.8	70.9	67.8	72.3	78.3	81.5	83.4	85.8	84.7	79.2	75.1	70.7	76.5
	Mean Daily Min.	61.5	63.9	59.0	64.4	70.6	74.2	75.9	78.2	76.1	71.7	68.0	63.3	68.9
	Mean Daily	65.4	67.1	64.0	68.4	74.2	77.8	79.7	82.0	80.6	75.6	71.7	67.5	72.8
	Max. Temperature	74.7	74.1	74.1	75.4	81.9	84.6	84.7	87.3	88.2	84.7	79.2	77.2	
	Min. Temperature	55.2	56.5	50.7	58.3	62.6	70.5	70.0	74.1	68.4	63.5	58.5	55.2	
2019	Mean Daily Max.	68.8	68.8	68.8	72.6	76.1	81.7	85.4	86.5	84.2	79.8	75.5	70.4	76.6
	Mean Daily Min.	60.8	60.6	61.0	64.8	67.9	74.1	77.3	77.9	76.5	72.5	67.3	62.5	68.6
	Mean Daily	65.4	65.1	65.0	68.7	72.1	77.8	81.5	82.5	80.2	76.0	71.7	67.1	72.8
	Max. Temperature	74.3	72.5	74.8	75.9	80.6	85.3	88.9	90.3	88.0	83.1	80.8	75.4	
	Min. Temperature	53.4	54.7	54.9	61.0	62.4	66.4	71.6	72.7	71.6	68.9	58.6	54.7	
2020	Mean Daily Max.	68.6	69.9	69.7	70.8	73.9	78.3	84.4	87.2	83.8	81.0	75.4	71.5	76.2
	Mean Daily Min.	60.7	61.8	61.5	62.6	65.9	71.0	77.0	78.9	76.5	74.2	67.7	64.4	68.5
	Mean Daily	64.9	66.2	65.9	67.2	69.8	74.5	80.6	83.0	80.2	77.3	71.6	68.1	72.4
	Max. Temperature	74.7	74.1	73.2	75.7	79.5	84.4	88.3	89.1	87.4	83.5	80.1	75.0	
	Min. Temperature	51.3	53.6	50.2	56.1	58.1	62.2	69.1	72.9	68.4	69.4	61.0	57.7	
2021	Mean Daily Max.	67.6	68.9	68.8	69.9	75.3	82.4	84.5	86.4	84.6	80.5	74.9	72.5	76.4
	Mean Daily Min.	59.5	62.7	60.6	61.7	67.3	74.4	76.5	78.0	76.4	72.6	67.6	64.9	68.5
	Mean Daily	64.3	66.1	64.5	66.2	71.1	78.0	80.4	82.1	80.4	76.8	71.3	68.9	72.5
	Max. Temperature	72.5	71.8	77.5	75.4	80.2	85.1	87.1	88.0	88.0	84.2	81.1	75.9	
	Min. Temperature	49.1	53.1	51.4	55.4	58.5	69.6	70.5	74.1	70.2	68.0	59.9	56.8	
2022	Mean Daily Max.	69.8	70.5	71.2	71.8	77.4	80.1	85.4	87.7	84.5	81.1	76.1	70.5	77.2
	Mean Daily Min.	61.1	62.1	62.8	64.6	69.6	72.5	77.3	78.8	76.2	73.4	69.4	62.7	69.2
	Mean Daily	65.8	66.4	66.9	68.1	73.1	75.9	80.9	83.0	80.2	77.0	72.6	66.9	73.1
	Max. Temperature	75.4	75.2	76.8	76.3	81.5	83.7	88.2	89.8	88.3	84.7	79.7	75.7	
	Min. Temperature	54.5	52.5	58.6	58.3	59.2	66.9	71.4	74.3	67.1	69.3	63.7	58.8	

Source: *The Bermuda Weather Service*

Chart 3.4

MEAN DAILY MAXIMUM, MINIMUM AND DAILY AIR TEMPERATURE, 2018-2022



Source: The Bermuda Weather Service

Table 3.4

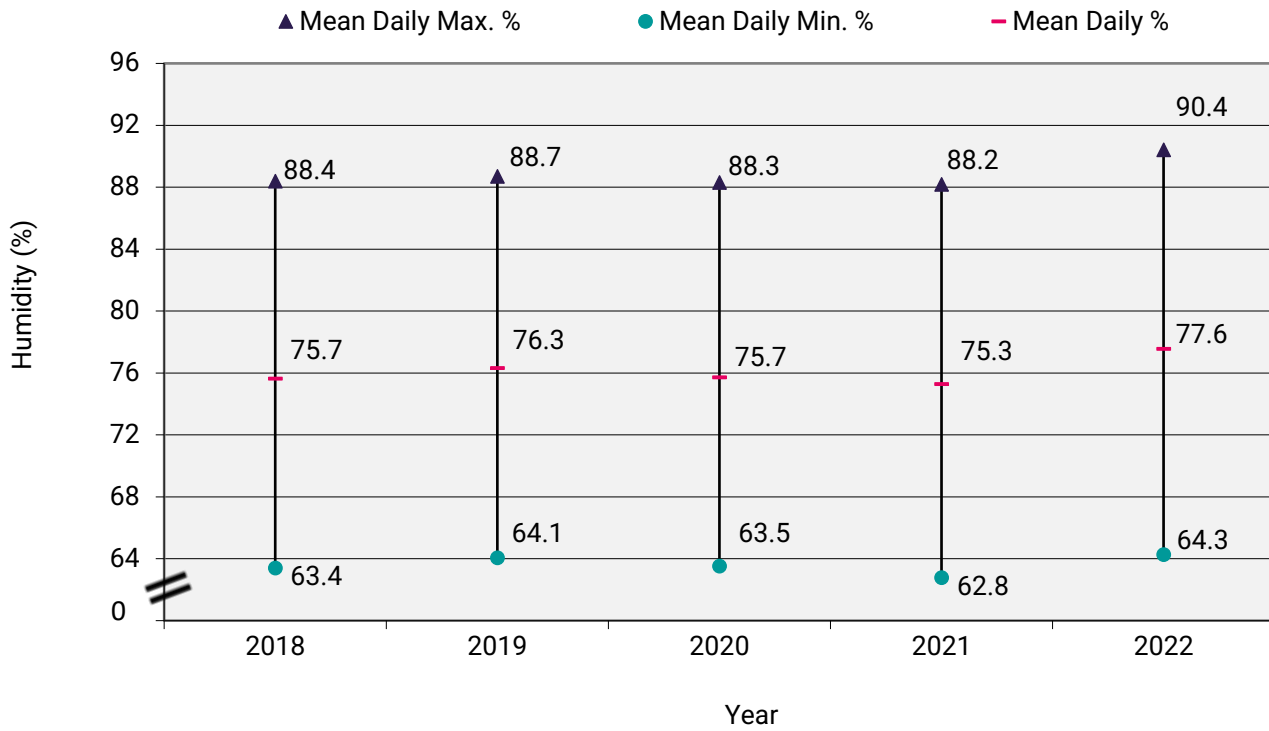
MEAN DAILY MAXIMUM, MINIMUM AND DAILY RELATIVE HUMIDITY, 2018–2022

Year		Month											Yearly Average	
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.		Dec.
2018	Mean Daily Max. %	87.6	90.4	89.1	89.8	89.7	90.7	90.0	86.1	88.1	84.1	88.9	86.2	88.4
	Mean Daily Min. %	59.7	66.4	54.6	65.2	67.8	69.2	70.3	64.4	63.5	57.6	63.3	58.9	63.4
	Mean Daily %	73.1	78.3	69.8	78.1	79.7	80.9	80.4	75.5	75.2	70.0	75.7	71.1	75.7
	Max. %	99.0	97.0	99.0	99.0	98.0	99.0	97.0	94.0	99.0	97.0	98.0	98.0	
	Min. %	39.0	40.0	44.0	37.0	48.0	56.0	60.0	58.0	49.0	42.0	43.0	42.0	
2019	Mean Daily Max. %	90.8	88.3	88.5	87.0	87.9	91.8	88.3	89.8	86.4	86.8	89.3	89.7	88.7
	Mean Daily Min. %	62.9	62.6	64.4	64.7	62.0	71.0	64.7	67.1	64.6	62.0	62.8	59.9	64.1
	Mean Daily %	75.8	75.9	77.3	75.4	74.7	82.2	76.9	78.7	75.6	74.3	75.9	73.3	76.3
	Max. %	99.0	98.0	99.0	98.0	98.0	97.0	98.0	97.0	98.0	96.0	97.0	99.0	
	Min. %	44.0	43.0	44.0	51.0	47.0	48.0	51.0	56.0	48.0	40.0	43.0	41.0	
2020	Mean Daily Max. %	87.0	91.7	88.8	88.0	89.1	89.0	87.6	85.9	87.2	90.0	88.3	87.3	88.3
	Mean Daily Min. %	57.2	65.2	61.9	61.7	63.2	68.1	69.2	63.9	67.9	68.2	59.2	56.6	63.5
	Mean Daily %	71.0	77.9	74.8	74.1	76.1	79.6	79.4	75.5	78.0	79.0	72.9	70.5	75.7
	Max. %	98.0	99.0	99.0	98.0	99.0	98.0	94.0	94.0	97.0	99.0	100.0	100.0	
	Min. %	38.0	38.0	40.0	43.0	43.0	40.0	59.0	54.0	46.0	50.0	40.0	45.0	
2021	Mean Daily Max. %	90.9	89.3	89.9	86.7	88.5	86.8	89.9	85.7	87.7	87.2	86.4	89.2	88.2
	Mean Daily Min. %	58.0	63.5	63.0	58.9	64.5	64.6	68.4	63.6	64.4	61.3	59.6	63.5	62.8
	Mean Daily %	72.1	76.5	76.2	72.1	76.5	76.6	80.0	74.9	76.2	73.8	73.0	75.6	75.3
	Max. %	100.0	99.0	99.0	96.0	97.0	97.0	97.0	94.0	97.0	98.0	99.0	99.0	
	Min. %	44.0	38.0	42.0	40.0	46.0	52.0	56.0	50.0	52.0	41.0	45.0	45.0	
2022	Mean Daily Max. %	91.4	91.0	87.1	90.6	93.3	91.2	90.5	87.5	87.7	94.1	91.5	89.1	90.4
	Mean Daily Min. %	58.6	63.1	60.2	61.7	72.5	68.5	67.2	62.7	63.0	71.4	63.4	58.9	64.3
	Mean Daily %	74.9	76.3	73.4	75.5	84.8	80.3	80.2	76.1	75.9	83.5	76.6	73.4	77.6
	Max. %	99.0	100.0	99.0	100.0	99.0	99.0	99.0	97.0	100.0	100.0	100.0	100.0	
	Min. %	44.0	40.0	43.0	37.0	41.0	44.0	57.0	50.0	43.0	50.0	46.0	42.0	

Source: The Bermuda Weather Service

Chart 3.5

MEAN DAILY MAXIMUM, MINIMUM AND DAILY RELATIVE HUMIDITY, 2018-2022



Source: The Bermuda Weather Service

Table 3.5

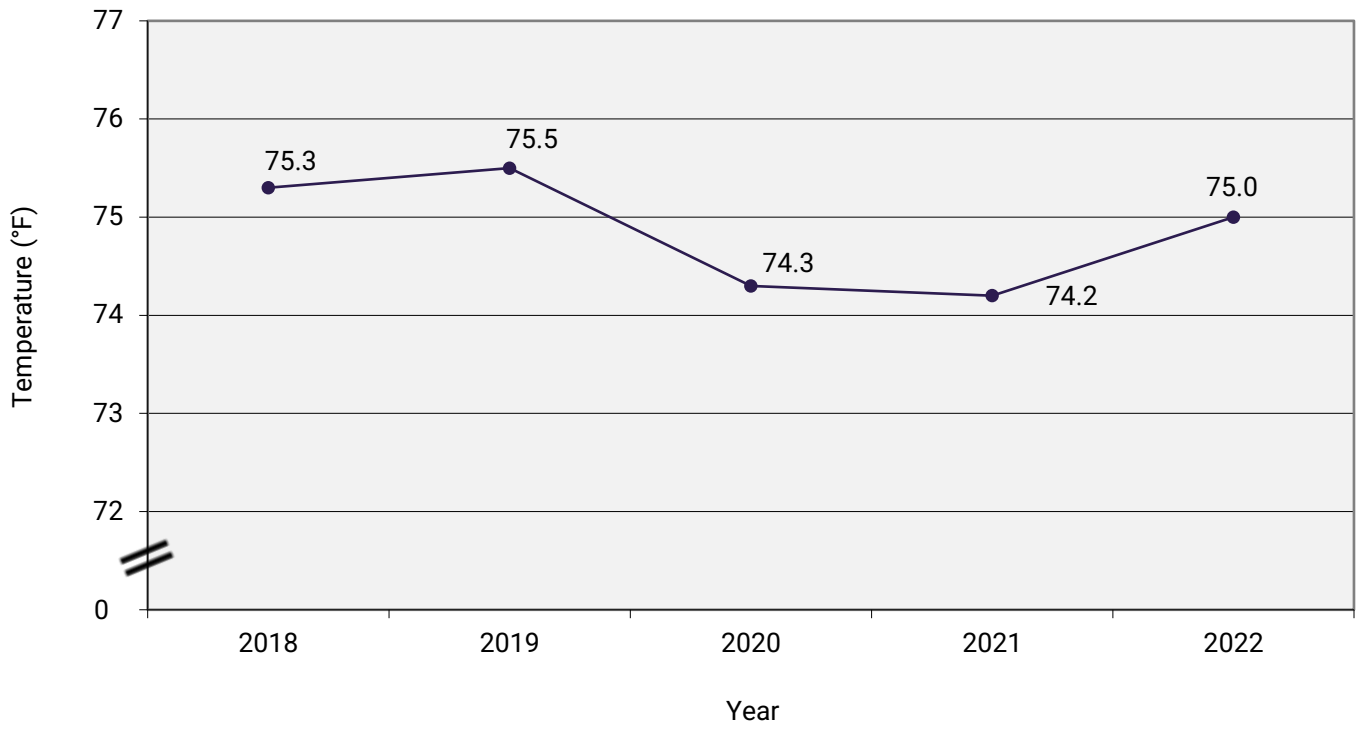
MEAN DAILY SEA SURFACE TEMPERATURE, 2018–2022

Year		Month											(°F) Yearly Average	
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.		Dec.
2018	Mean Daily	67.6	68.5	65.9	70.5	76.1	80.9	82.8	85.9	84.8	78.1	74.0	68.3	75.3
	Max. Temperature	70.2	70.7	70.7	71.8	80.4	82.0	84.4	88.7	88.7	80.4	75.4	68.7	
	Min. Temperature	64.9	65.3	64.4	64.6	70.9	79.5	82.0	84.2	80.6	73.9	68.5	67.1	
2019	Mean Daily	67.0	67.6	67.3	71.6	75.9	80.2	84.6	86.4	84.2	78.0	74.1	69.1	75.5
	Max. Temperature	68.0	68.0	69.1	75.6	77.0	83.1	86.9	87.1	87.8	79.9	77.2	70.9	
	Min. Temperature	64.8	66.9	66.0	67.6	75.4	75.9	82.2	85.8	79.0	77.2	70.0	67.3	
2020	Mean Daily	66.8	66.9	66.5	69.2	72.5	76.8	82.1	86.5	83.2	79.3	73.9	68.2	74.3
	Max. Temperature	67.8	68.7	68.4	72.0	74.1	79.5	86.0	87.8	85.3	81.3	77.0	71.6	
	Min. Temperature	64.4	65.5	64.8	68.4	71.2	74.8	79.0	85.1	80.1	77.0	70.3	66.9	
2021	Mean Daily	65.2	65.8	66.4	68.1	73.0	79.2	82.8	84.6	83.5	79.1	73.3	68.9	74.2
	Max. Temperature	67.3	70.3	70.9	70.2	77.9	81.0	84.4	85.1	85.5	81.7	76.8	70.3	
	Min. Temperature	61.0	61.0	63.9	64.8	71.1	77.0	80.6	83.7	80.6	76.8	69.1	67.1	
2022	Mean Daily	67.3	67.6	68.9	69.9	74.1	78.7	82.2	86.1	83.5	79.5	74.4	67.6	75.0
	Max. Temperature	69.1	69.8	70.9	71.6	78.8	79.9	85.5	86.9	86.9	81.7	78.3	71.6	
	Min. Temperature	64.9	64.4	66.6	66.6	68.0	77.0	79.2	85.5	80.1	77.7	71.4	64.8	

Source: *The Bermuda Weather Service*

Chart 3.6

MEAN DAILY SEA SURFACE TEMPERATURE, 2018-2022



Source: The Bermuda Weather Service

Table 3.6

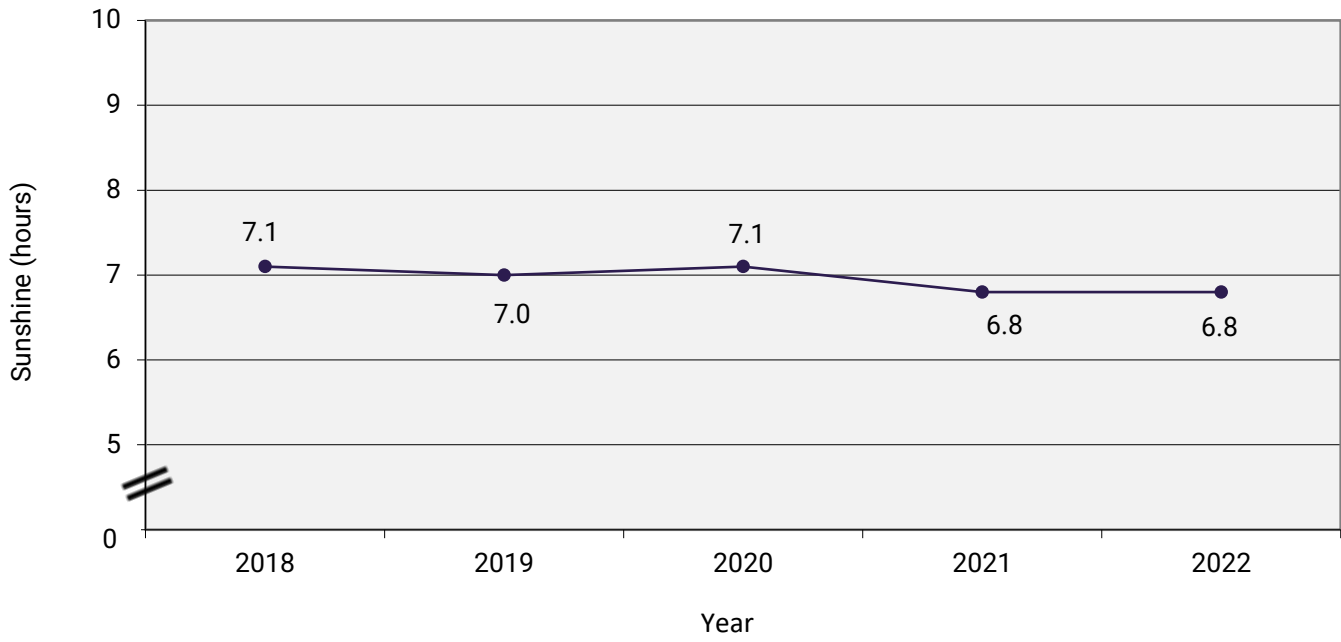
MEAN DAILY AND TOTAL HOURS OF SUNSHINE, 2018–2022

Year		Month											(Hours) Yearly Average	
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.		Dec.
2018	Mean Daily	3.8	6.3	6.5	7.1	9.4	8.0	8.7	10.7	8.0	7.3	5.0	4.3	7.1
	Max. Hours	9.7	10.8	10.4	12.0	12.5	12.6	12.5	12.3	11.6	10.9	9.7	8.9	
	Min. Hours	0.0	0.0	0.0	0.1	0.2	0.0	1.7	5.2	0.0	0.9	0.0	0.0	
	Total Hours	118.1	176.2	200.6	214.1	291.2	240.7	268.2	330.3	240.3	225.4	150.7	133.6	
2019	Mean Daily	4.6	5.7	5.0	8.7	9.0	8.2	9.7	9.0	7.7	6.7	5.6	4.6	7.0
	Max. Hours	8.9	10.0	10.8	12.4	12.5	12.7	13.2	12.2	11.0	10.7	10.2	9.1	
	Min. Hours	0.0	0.0	0.0	1.8	1.7	1.5	0.0	0.3	0.0	0.7	0.0	0.0	
	Total Hours	143.7	160.7	154.4	259.9	277.5	247.4	301.0	277.6	231.5	207.8	166.8	143.0	
2020	Mean Daily	5.1	5.3	6.0	7.1	8.8	7.8	9.6	9.3	7.9	7.2	6.2	4.6	7.1
	Max. Hours	8.9	10.2	10.8	11.9	12.3	12.6	12.7	12.6	11.3	9.8	9.8	8.6	
	Min. Hours	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.5	0.0	0.0	0.0	0.0	
	Total Hours	159.5	155.1	184.9	213.7	273.0	233.3	297.0	289.3	236.8	222.0	185.1	143.5	
2021	Mean Daily	4.2	5.9	5.0	6.6	8.6	9.7	7.1	10.5	7.3	6.3	4.9	5.7	6.8
	Max. Hours	8.5	10.7	10.4	11.8	12.9	12.7	12.4	12.3	11.9	10.2	9.1	9.2	
	Min. Hours	0.0	0.0	0.0	0.0	0.8	0.9	1.2	6.3	0.0	0.0	0.0	0.0	
	Total Hours	131.0	165.0	155.6	198.9	265.8	289.5	220.2	325.7	219.8	196.8	146.7	177.0	
2022	Mean Daily	4.8	5.4	7.5	6.6	8.1	7.4	9.3	9.5	7.2	5.9	5.0	4.5	6.8
	Max. Hours	9.2	10.6	11.0	11.4	12.3	12.2	13.0	12.1	11.1	10.5	9.0	9.3	
	Min. Hours	0.0	0.0	0.0	0.0	0.5	0.0	0.0	1.4	0.0	0.0	0.0	0.0	
	Total Hours	147.6	149.8	233.4	197.7	250.6	222.5	289.6	293.5	216.0	182.9	151.3	140.4	

Source: *The Bermuda Weather Service*

Chart 3.7

MEAN DAILY HOURS OF SUNSHINE, 2018-2022



Source: The Bermuda Weather Service

Table 3.7

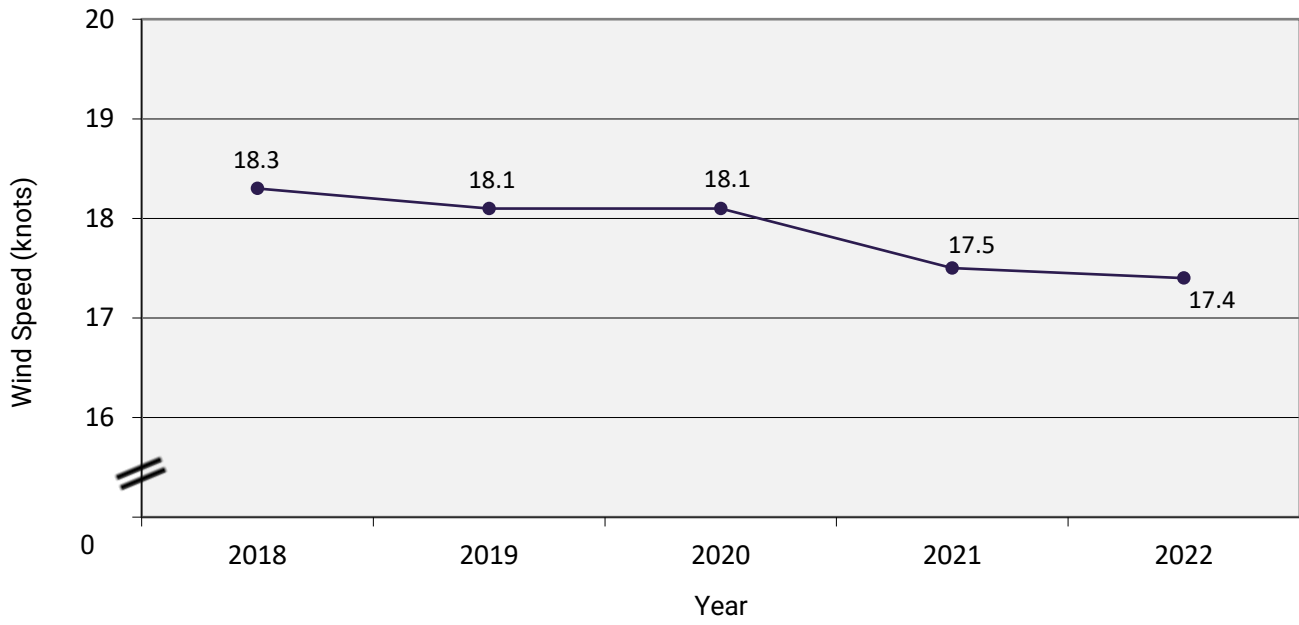
MEAN DAILY, MAXIMUM, MINIMUM AND PEAK WIND SPEEDS, 2018–2022

Year		Month											(Knots)	
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Yearly Average
2018	Mean Daily	21.8	15.9	27.5	18.7	14.5	18.0	16.5	12.5	16.5	17.2	19.4	21.4	18.3
	Max. Wind Speed	36.0	21.0	44.0	40.0	22.0	26.0	29.0	21.0	29.0	24.0	38.0	34.0	
	Min. Wind Speed	8.0	8.0	7.0	8.0	8.0	11.0	9.0	8.0	6.0	7.0	9.0	13.0	
	Peak Wind Speed	50.0	31.0	59.0	71.0	37.0	37.0	38.0	32.0	39.0	33.0	50.0	46.0	
2019	Mean Daily	21.4	19.1	19.7	16.6	16.8	16.5	14.8	16.6	18.4	16.4	20.6	20.1	18.1
	Max. Wind Speed	34.0	29.0	31.0	26.0	29.0	39.0	24.0	25.0	71.0	28.0	32.0	35.0	
	Min. Wind Speed	10.0	7.0	10.0	9.0	7.0	7.0	6.0	8.0	7.0	7.0	10.0	7.0	
	Peak Wind Speed	45.0	41.0	41.0	33.0	49.0	49.0	35.0	36.0	101.0	35.0	47.0	47.0	
2020	Mean Daily	21.8	21.1	18.8	23.9	18.4	15.0	13.2	14.3	17.3	15.7	18.3	19.4	18.1
	Max. Wind Speed	38.0	36.0	43.0	37.0	30.0	29.0	25.0	25.0	51.0	26.0	26.0	37.0	
	Min. Wind Speed	10.0	12.0	7.0	13.0	10.0	8.0	7.0	7.0	8.0	8.0	10.0	10.0	
	Peak Wind Speed	52.0	46.0	53.0	52.0	46.0	41.0	33.0	38.0	77.0	37.0	38.0	48.0	
2021	Mean Daily	24.2	20.9	18.6	19.8	16.6	14.6	15.0	12.4	14.9	16.6	19.3	17.4	17.5
	Max. Wind Speed	45.0	34.0	34.0	29.0	28.0	24.0	23.0	20.0	27.0	33.0	34.0	26.0	
	Min. Wind Speed	10.0	13.0	7.0	8.0	7.0	8.0	8.0	7.0	6.0	8.0	10.0	8.0	
	Peak Wind Speed	65.0	49.0	49.0	42.0	39.0	40.0	34.0	32.0	37.0	44.0	50.0	36.0	
2022	Mean Daily	21.5	17.6	18.4	18.3	14.8	16.0	13.5	13.9	17.8	16.7	19.3	20.5	17.4
	Max. Wind Speed	40.0	31.0	32.0	30.0	24.0	43.0	22.0	26.0	59.0	26.0	34.0	32.0	
	Min. Wind Speed	11.0	8.0	8.0	9.0	9.0	9.0	8.0	7.0	8.0	6.0	10.0	12.0	
	Peak Wind Speed	56.0	42.0	45.0	39.0	35.0	54.0	31.0	36.0	81.0	36.0	48.0	47.0	

Source: *The Bermuda Weather Service*

Chart 3.8

YEARLY AVERAGE WIND SPEED, 2018-2022



Source: The Bermuda Weather Service

NATURAL AND ENVIRONMENTAL DISASTERS

Occurrences of natural and environmental disasters are rare in Bermuda.

HURRICANES

- In 2022, Bermuda was impacted by Tropical Storm Alex, Hurricane Earl, and Hurricane Fiona. Hurricane Fiona was the most significant, causing power outages for approximately 30,000 homes (Table 4.1).

EMERGENCY INCIDENTS

- In 2022, there were 4,420 emergency incidents attended by the Bermuda Fire and Rescue Service (Table 4.2). This represents a 6.0 per cent increase over the amount of incidents attended in 2021.

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 Program

Table 4.1

NATURAL DISASTERS, 2022

Item	
Type of disaster	Tropical Storm (Alex)
Date started	June 6
Total casualties	—
of which: dead	—
Power outages (homes affected)	≈ 1,000 homes
Peak Wind Speed ¹	38 knots
Peak Wind Gusts ¹	51 knots
Damage (\$ million) ²	—

Item	
Type of disaster	Hurricane (Earl)
Date started	September 9
Total casualties	—
of which: dead	—
Power outages (homes affected)	≈ 1,500 homes
Peak Wind Speed ¹	27 knots
Peak Wind Gusts ¹	41 knots
Damage (\$ million) ²	—

Item	
Type of disaster	Hurricane (Fiona)
Date started	September 23
Total casualties	—
of which: dead	—
Power outages (homes affected)	≈ 30,000 homes
Peak Wind Speed ¹	56 knots
Peak Wind Gusts ¹	81 knots
Damage (\$ million) ²	—

Source: *The Royal Gazette and The Bermuda Weather Service*

¹ Data are sourced from observations recorded at the L.F. Wade International Airport.

² Insured Losses.

Table 4.2

EMERGENCY INCIDENTS ATTENDED BY THE BERMUDA FIRE AND RESCUE SERVICE¹, 2018–2022

Year	Total	Type of Emergency Incident Attended				
		Structure Fire ²	Vehicle Fire	EMS ³	Minor Incidents ⁴	Other ^{2,5}
2018	4,188	1,109	15	2,086	384	594
2019	4,791	1,081	28	2,171	553	958
2020	3,899	1,098	24	1,713	232	832
2021	4,169	1,011	18	1,981	268	891
2022	4,420	1,085	16	2,379	331	609

Source: Bermuda Fire and Rescue Service

¹ This table format was revised in 2022.

² Includes false alarms.

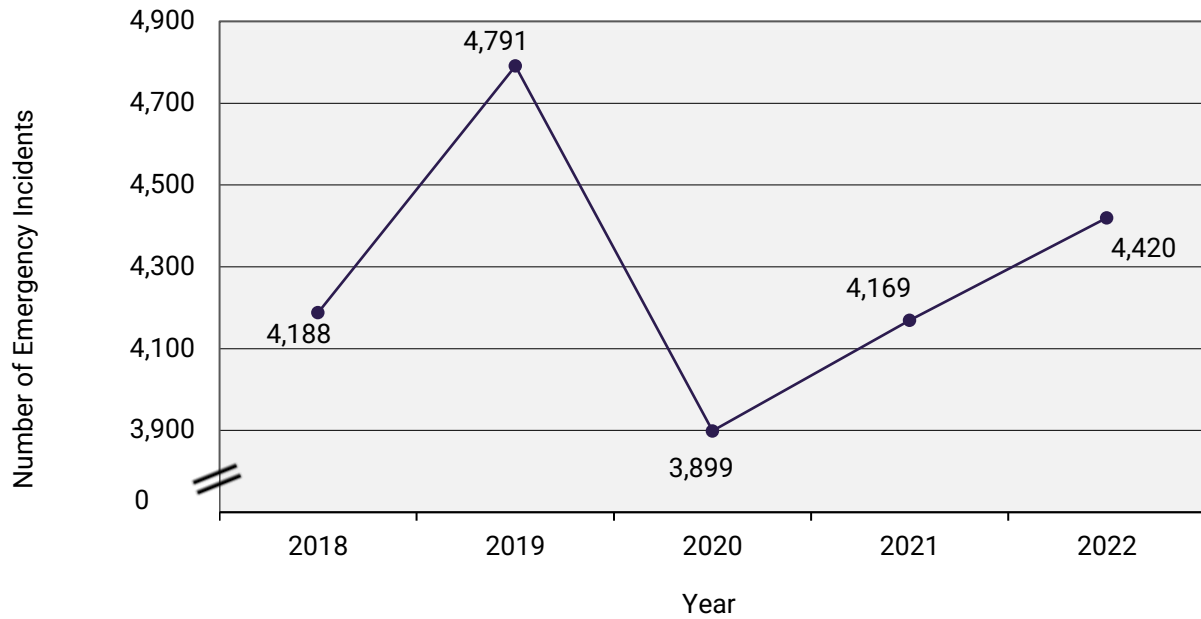
³ Emergency Medical Services

⁴ Includes brush fires, trash fires, gas cylinder leaks, oil spills, floodings, pole fires, etc.

⁵ 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

EMERGENCY INCIDENTS ATTENDED BY THE BERMUDA FIRE AND RESCUE SERVICE, 2018-2022



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 2022, the value of imported petroleum oils and oils from bituminous minerals (other than crude) imported into Bermuda, was \$138.0 million, an increase of 59.4 per cent from the total value imported in 2021 (Table 5.1).
- The quantity of gas oils (diesel) increased to 10.0 million kg in 2022, an increase of 16.3 per cent over the previous year (Table 5.1).
- The quantity of kerosene and other medium oils (not including gas oils) increased from 2021 to 2022 (101.5%), as well as the value of the same type (234.3%) over the same period (Table 5.1).

MINERAL FUELS

- In 2022, the value of imported mineral fuels, mineral oils and related products rose to \$141.5 million. This is a 56.2 per cent increase from the \$90.6 million imported in 2021 (Table 5.2).

ELECTRICITY

- Total electricity consumption in 2022 grew to approximately 524.2 million kWh from 522.6 million kWh in 2021. The residential sector accounted for under half (45.5%) of all electricity consumed in Bermuda in 2022 (Table 5.3).

TRANSPORT

- In 2022, there were 49,668 registered road vehicles in Bermuda. Private cars accounted for nearly half (46.1%) of this total, while just over one-third (36.2%) were motorcycles and scooters (Table 5.6).

Table 5.1

VALUE AND QUANTITY OF IMPORTED FUEL¹ BY TYPE, 2020–2022

Type	Year					
	2020		2021		2022	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Total	50,254,896 r	144,568,996 r	86,612,938	163,055,924	138,027,029	208,379,796
Percentage change (%)	-48.5 r	-21.8 r	+72.3 r	+12.8 r	+59.4	+27.8
Light oils and preparations (i.e. motor spirits)	8,413,081 r	15,634,310 r	19,890,901	19,150,374	9,671,067	6,946,726
Gas oils (diesel)	11,144,354 r	20,431,845 r	10,058,294	8,580,203	12,777,344	9,980,980
Gas oils (heavy atmospheric)	—	—	—	—	—	—
Kerosene and other medium oils (not including gas oils)	5,211,921	12,034,416	6,369,135	8,755,200	21,291,305	17,644,533
Fuel oils not elsewhere specified	24,599,716	96,229,353	49,158,350	126,156,919	92,459,627	173,330,346
Other lubricating oils and grease, etc.	835,885	226,618	1,121,957	409,962	1,814,490	476,002
Other waste oils	49,939	12,455	14,302	3,268	13,196	1,210

Source: Department of Statistics

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

Table 5.2

VALUE AND QUANTITY OF IMPORTED MINERAL FUELS, MINERAL OILS AND RELATED PRODUCTS CONSUMED BY TYPE, 2020–2022

Type	Year					
	2020		2021		2022	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Total	52,691,008 r	149,062,280 r	90,614,063	169,087,092	141,507,292	216,394,581
Percentage change (%)	-47.5 r	-25.4 r	+72.0 r	+13.4 r	+56.2	+28.0
Coal, briquettes	14,184	3,447	8,840	7,047	8,950	4,792
Lignite	—	—	102	15	10	1
Peat	240,384	86,530	259,715	171,903	309,483	157,128
Coke and semi coke	91,553	54,316	67,757	40,035	109,981	54,097
Coal gas, water gas	—	—	15	12	—	—
Tar distilled	—	—	—	—	—	—
Oils and other products	1,251	503	11,274	805	614	300
Pitch and pitch coke	—	—	—	—	30	1
Petroleum oils	—	—	—	—	51	1
Petroleum oils other than crude	50,254,896 r	144,568,996 r	86,612,938	163,055,924	138,026,978	208,379,795
Petroleum gases & other gaseous hydrocarbons	1,258,205	3,055,165	3,040,053	4,913,401	2,373,043	3,028,793
Petroleum jelly	57,048	5,227	94,755	4,948	76,281	5,916
Petroleum coke	29,766	2,614	30,388	3,214	42,881	3,967
Other bitumen and asphalt	434,109	366,573	22,511	30,472	92,099	4,194,116
Bituminous mixtures	309,612	918,910	465,716	859,315	466,890	565,674
Electrical energy	—	—	—	—	—	—

Source: Department of Statistics

Table 5.3

ELECTRICITY CONSUMPTION BY TYPE OF CONSUMER, 2018–2022

Year	Total (‘000 kWh)	Type		
		Residential (‘000 kWh)	Commercial (‘000 kWh)	Other ¹ (‘000 kWh)
2018	567,827	240,302	274,770	52,755
2019	554,100	237,710	263,793	52,597
2020	517,883	242,697	224,744	50,442
2021	522,566	245,639	226,346	50,581
2022	524,224	238,414	236,273	49,537

Source: Liberty 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, 2018–2022

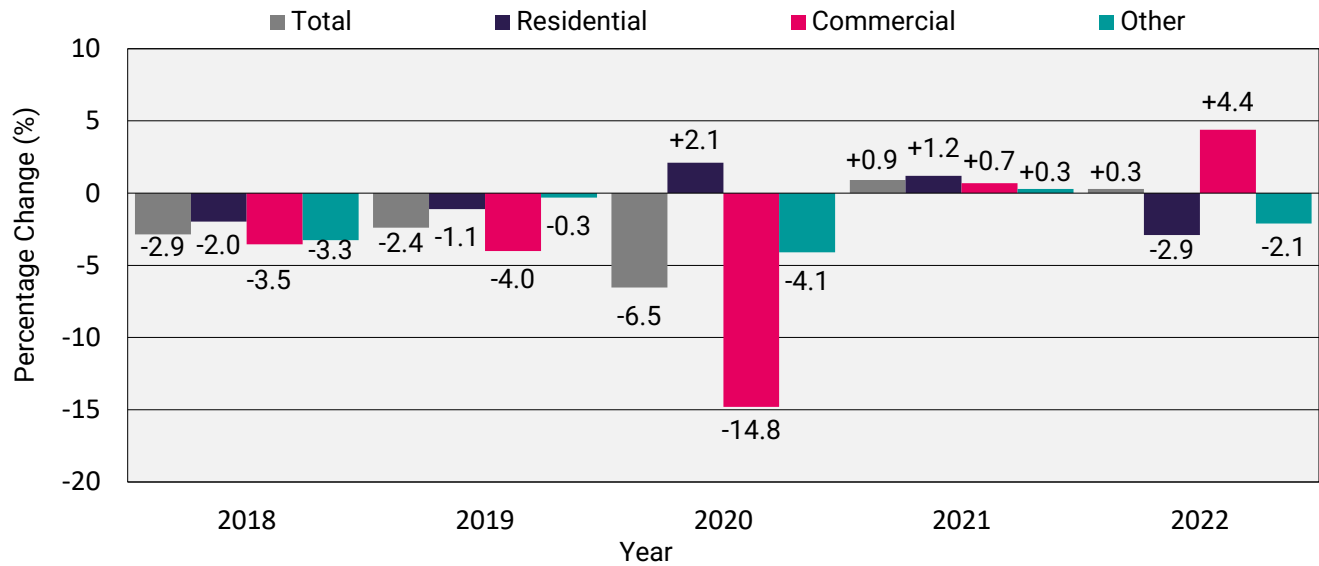
Year	Total Electricity Consumption	Type		
		Residential Percentage	Commercial Percentage	Other ¹ Percentage
2018	-2.9	-2.0	-3.5	-3.3
2019	-2.4	-1.1	-4.0	-0.3
2020	-6.5	+2.1	-14.8	-4.1
2021	+0.9	+1.2	+0.7	+0.3
2022	+0.3	-2.9	+4.4	-2.1

Source: Liberty 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, 2018–2022



Source: Liberty Group Limited

Table 5.5

PERCENTAGE DISTRIBUTION OF TOTAL ELECTRICITY CONSUMPTION BY TYPE OF CONSUMER, 2018–2022

Year	Total	Type		
		Residential Percentage	Commercial Percentage	Other ¹ Percentage
2018	100.0	42.3	48.4	9.3
2019	100.0	42.9	47.6	9.5
2020	100.0	46.9	43.4	9.7
2021	100.0	47.0	43.3	9.7
2022	100.0	45.5	45.1	9.4

Source: Liberty Group Limited

Table 5.6

REGISTERED ROAD VEHICLES^{1,2}, 2018–2022

Type	Year				
	2018	2019	2020	2021	2022
Total	49,087	49,647	49,114	48,994	49,668
Percentage change (%)	+0.1	+1.1	-1.1	-0.2	1.4
Private Cars	22,151	22,238	22,515	22,757	22,896
Motorcycles & Scooters	17,438	17,857	18,042	17,878	18,003
Auxiliary & Livery Cycles	3,547	3,351	2,392	2,122	2,407
Trucks	3,762	3,778	3,806	3,904	3,989
Taxis	557	573	558	535	523
Tractors & Tractor Trailers ³	268	351	329	341	343
Government Private (GP) Vehicles ⁴	246	245	238	228	263
Trailers	276	280	261	267	276
Buses, Minibuses & Limousines	258	292	295	276	285
Rental Minicars ⁵	89	191	195	190	184
Light Private Cars	63	64	68	72	72
Ambulances & Fire Engines	48	46	45	45	39
Construction Vehicles ⁶	47	44	38	37	37
Military Vehicles	49	47	50	53	51
Other ⁷	288	290	282	289	300

Source: Transport Control Department

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

² This table format was revised in 2021.

³ Includes farm tractors.

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

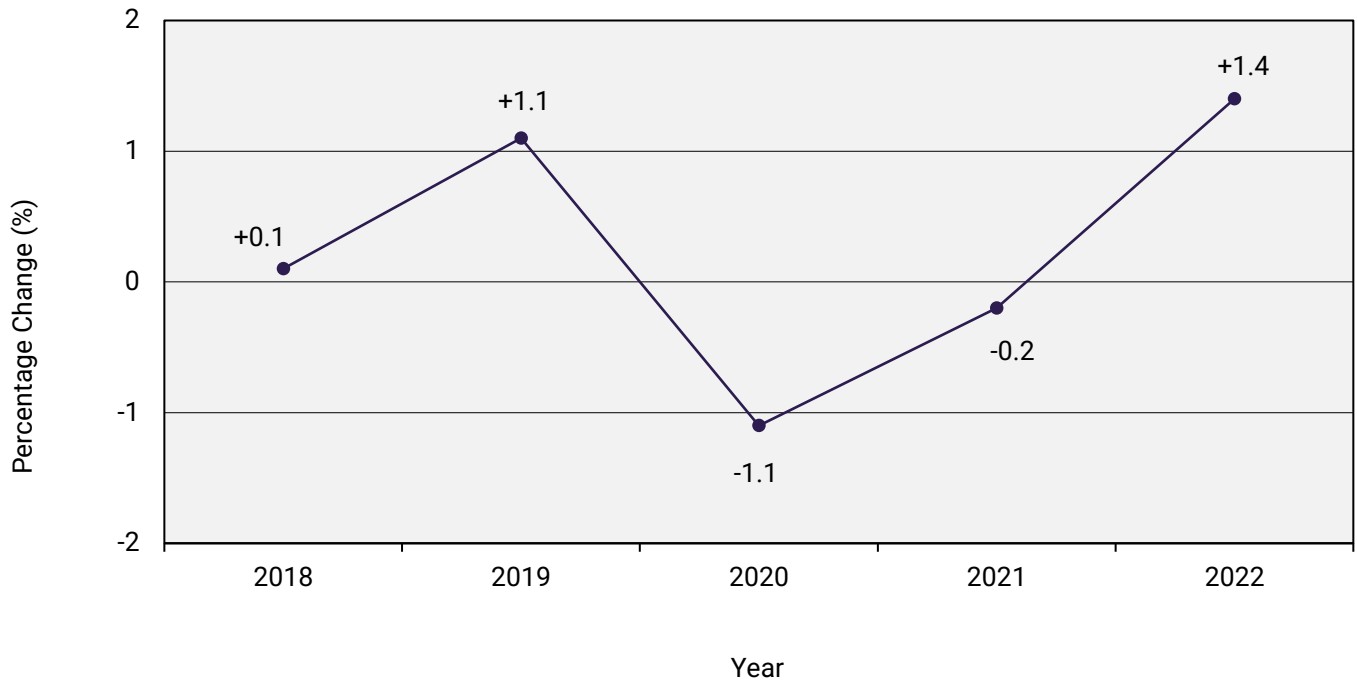
⁵ Rental minicars were introduced in 2017.

⁶ Includes cement mixers.

⁷ 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, 2018-2022



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 2022, fertilizers imported into Bermuda were valued at \$663,571, representing a 1.3 per cent increase in value despite a 21.8 per cent decrease in quantity to 193,619 kg compared to 2021 (Table 6.1).
- Other fertilizers accounted for 71.1 per cent of the total value of fertilizers imported to Bermuda in 2022 (Table 6.1).
- In 2022, the total value of pesticides imported into Bermuda fell to approximately \$2.5 million for 330,054 kg, a 23.4 per cent decrease from 2021 (Table 6.2).
- Disinfectants accounted for less than half (40.1%) of the total value of pesticides imported to Bermuda in 2022 (Table 6.2).

Table 6.1

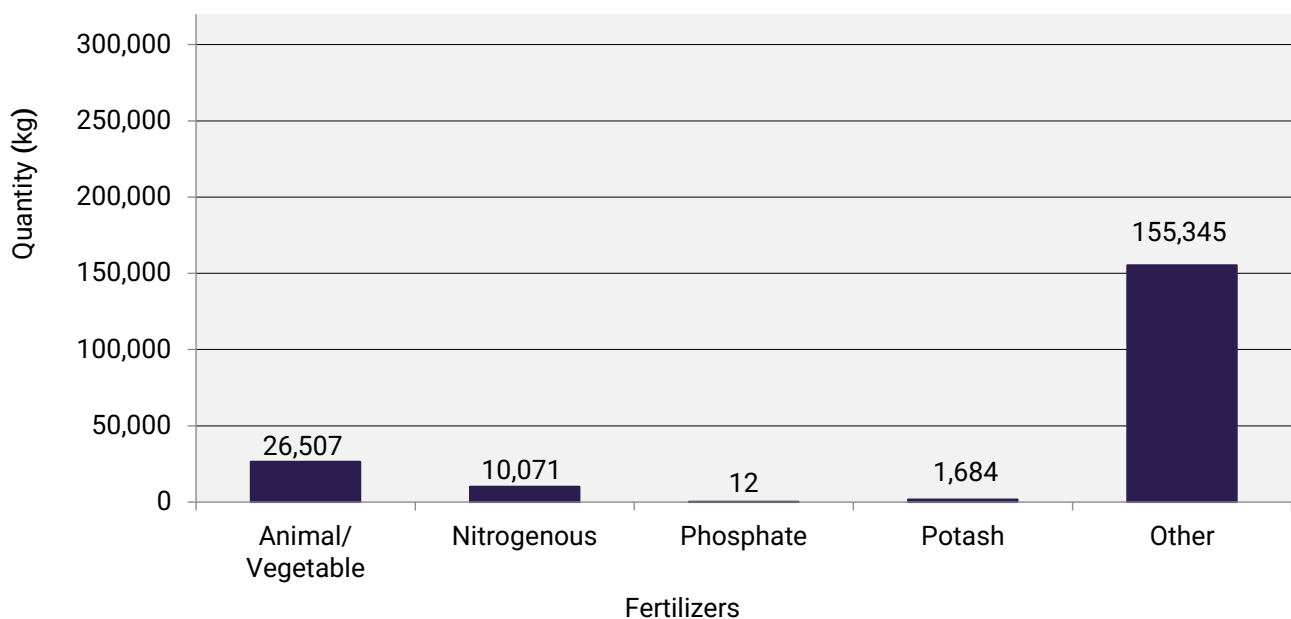
IMPORTED FERTILIZERS BY TYPE, 2020–2022

Category	Year					
	2020		2021		2022	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Total	803,979	305,061	655,363	247,476	663,571	193,619
Percentage change (%)	+27.3	+6.8	-18.5	-18.9	+1.3	-21.8
Animal/Vegetable fertilizers	166,400	48,657	196,980	58,648	136,925	26,507
Nitrogenous fertilizers	68,327	50,134	58,804	23,603	50,955	10,071
Phosphate fertilizers	2,703	62	1,859	24	40	12
Potash fertilizers	1,189	158	3,488	654	3,589	1,684
Other fertilizers ¹	565,359	206,051	394,231	164,547	472,062	155,345

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, 2022

Source: Department of Statistics

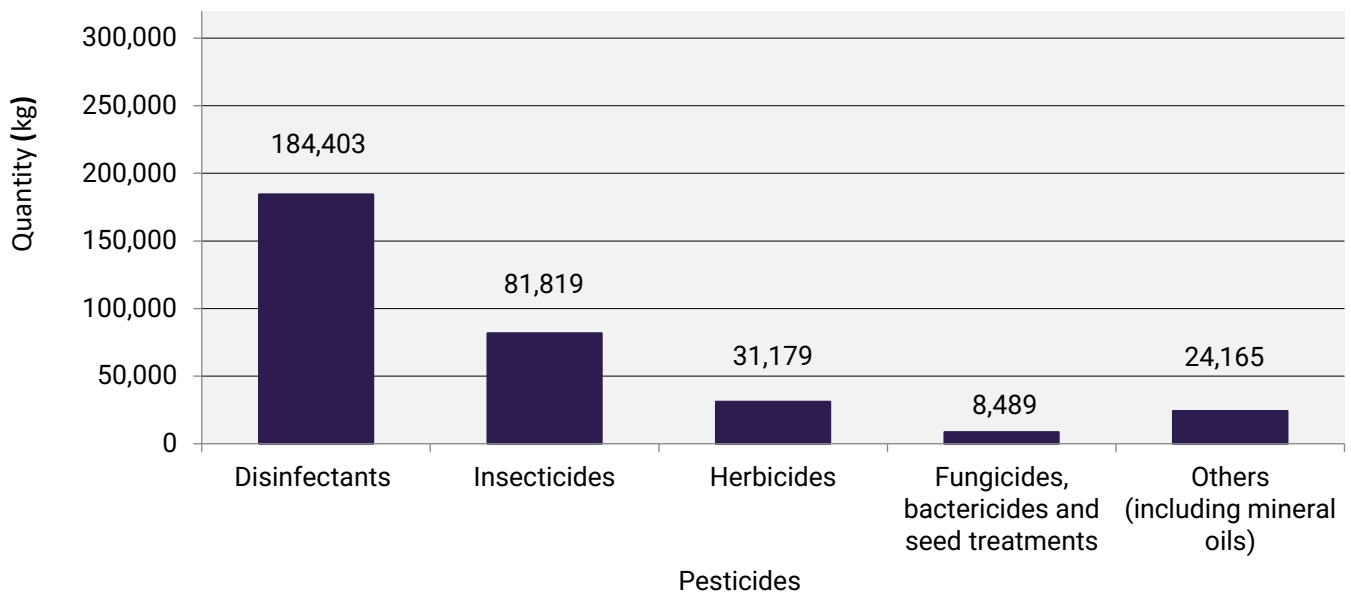
Table 6.2

IMPORTED PESTICIDES BY TYPE, 2020–2022

Category	Year					
	2020		2021		2022	
	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)	Value (\$)	Quantity (kg)
Total	3,543,550	793,217	3,225,713	468,629	2,470,632	330,054
Percentage change (%)	+70.4	+120.0	-9.0	-40.9	-23.4	-29.6
Disinfectants	2,112,056	543,825	1,572,918	278,196	991,279	184,403
Insecticides	876,168	92,242	1,098,756	114,231	983,598	81,819
Herbicides	214,340	57,948	280,167	48,983	214,198	31,179
Fungicides, bactericides and seed treatments	91,388	19,909	82,742	9,808	95,722	8,489
Others (including mineral oils)	249,598	79,293	191,130	17,411	185,834	24,165

Source: Department of Statistics

Chart 6.2

IMPORTED PESTICIDES BY TYPE, 2022

Source: Department of Statistics

LAND USE

The data in the Land Use Section was collected in 2001 and 2016, respectively by the Department of Planning and has not been updated.

LAND USE

- Residential land occupied 46.7 per cent of all land in Bermuda, covering roughly 6,210 acres of land (Table 7.1).
- 4,335 acres were dedicated to open space land use which is comprised of nature reserves, rural areas, golf courses, recreational spaces and other open spaces. This represents nearly one-third (32.6%) of Bermuda's land (Table 7.1).
- Land use for commercial purposes (such as retail and office space) accounted for 2.0 per cent 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 (2,162.7 acres) and Pembroke has the least (1,170.3 acres) (Table 7.2.1).

MUNICIPALITIES

- Among the two municipalities, the City of Hamilton occupies the least amount of land in Bermuda (176.3 acres) and the Town of St. George holds the most (341.0 acres) (Table 7.2.1).

Note: The Land Use Section uses data collected from the Department of Planning, Land Use Survey 2001 and 2016, respectively. In some tables, figures will not be comparable.

Table 7.1

LAND USE, 2016

Main Use	Sub-Category	Total Area (Acres)	Percentage Distribution
Total		13,289.3	100.0
Residential	Total	6,209.8	46.7
	Housing	5,924.1	44.5
	Condos	257.7	1.9
	Institutional	28.0	0.2
Open space	Total	4,335.0	32.6
	Nature reserve	1,231.4	9.3
	Rural	1,088.7	8.2
	Other	960.7	7.2
	Golf courses	790.1	5.9
	Recreation	264.1	2.0
Utilities	Total	752.0	5.7
	Airport	548.6	4.1
	Waste	89.7	0.7
	Transport	44.0	0.3
	BELCO	37.9	0.3
	Docks	31.8	0.2
Institutional	Total	580.6	4.4
	Education	258.0	1.9
	Religious	106.0	0.8
	Government	78.1	0.6
	Police	31.5	0.2
	Hospital	34.7	0.3
	Prison	29.3	0.2
	Social	43.0	0.3
Tourism	Total	293.2	2.2
	Cottage colonies	185.4	1.4
	Hotels	107.8	0.8
Industrial	Total	313.4	2.4
	General	197.9	1.5
	Light industrial	65.2	0.5
	Quarry	50.3	0.4
Vacant	Total	553.7	4.2
	Vacant land	506.2	3.8
	Vacant buildings	47.5	0.4
Commercial	Total	260.7	2.0
	Retail	144.8	1.1
	Office	64.4	0.5
	Mixed-use	51.5	0.4

Source: Department of Planning, Land Use Survey 2016

The 2016 Land Use Survey was based on the 2012 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, 2001

Main Use / Sub-Category	Parish/Town/City										
	St. George's	Town of St. George	Hamilton	Smith's	Devonshire	Pembroke	The City of Hamilton	Paget	Warwick	South- ampton	Sandy's
Total	2,162.7	341.0	1,312.2	1,216.3	1,221.4	1,170.3	176.3	1,303.0	1,415.4	1,511.7	1,438.4
Residential	450.3	98.6	585.4	709.7	562.4	758.1	27.4	803.6	707.0	610.7	669.5
Housing	444.2	95.9	570.1	696.0	527.2	742.8	25.7	780.0	686.2	586.1	645.4
Condos	6.1	2.7	15.3	10.6	28.0	11.9	—	21.8	20.8	24.6	20.4
Institutional	—	—	—	3.1	7.2	3.5	1.7	1.8	—	—	3.7
Open space	715.6	138.8	611.3	432.7	499.3	132.3	7.9	296.8	584.8	614.4	383.0
Nature reserve	296.4	8.4	156.2	106.0	163.7	74.0	6.4	70.3	164.5	104.3	107.8
Other	218.9	30.2	167.9	75.3	57.0	25.4	1.5	59.3	65.3	121.7	124.0
Golf courses	139.5	79.7	127.7	—	76.6	—	—	10.8	171.0	198.1	5.4
Recreation	36.0	—	9.1	24.8	35.4	27.3	—	4.2	53.4	16.9	33.9
Rural	24.9	20.4	150.4	226.6	166.6	5.7	—	152.2	130.7	173.5	111.9
Utilities	606.2	9.4	10.8	6.7	23.5	23.5	26.4	—	—	4.7	20.2
Airport	548.4	—	—	—	—	—	—	—	—	—	—
Waste	37.0	2.4	10.8	—	14.1	—	—	—	—	—	2.7
Transport	10.2	3.2	—	—	5.0	3.2	16.1	—	—	3.3	2.5
Docks	6.5	3.7	—	—	—	—	10.3	—	—	—	15.1
BELCO	4.1	—	—	6.7	4.4	20.3	—	—	—	1.4	—
Institutional	48.1	33.9	13.0	15.8	72.6	96.2	29.9	66.4	54.6	30.7	60.6
Education	27.3	20.4	8.9	11.3	36.0	47.8	4.4	27.9	28.0	17.0	25.3
Police	15.5	0.5	—	—	9.3	1.3	1.1	—	9.0	6.8	15.4
Religious	2.3	10.0	4.1	4.5	5.0	15.7	6.6	10.3	10.3	6.9	11.9
Prison	1.5	—	—	—	—	2.8	5.3	4.6	2.6	—	—
Government	1.5	2.9	—	—	11.0	25.5	12.5	8.9	—	—	1.2
Hospital	—	—	—	—	11.3	—	—	14.7	—	—	3.2
Social	—	—	—	—	—	3.2	—	—	4.7	—	3.7

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 13,430.4 acres (low tide 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, 2001

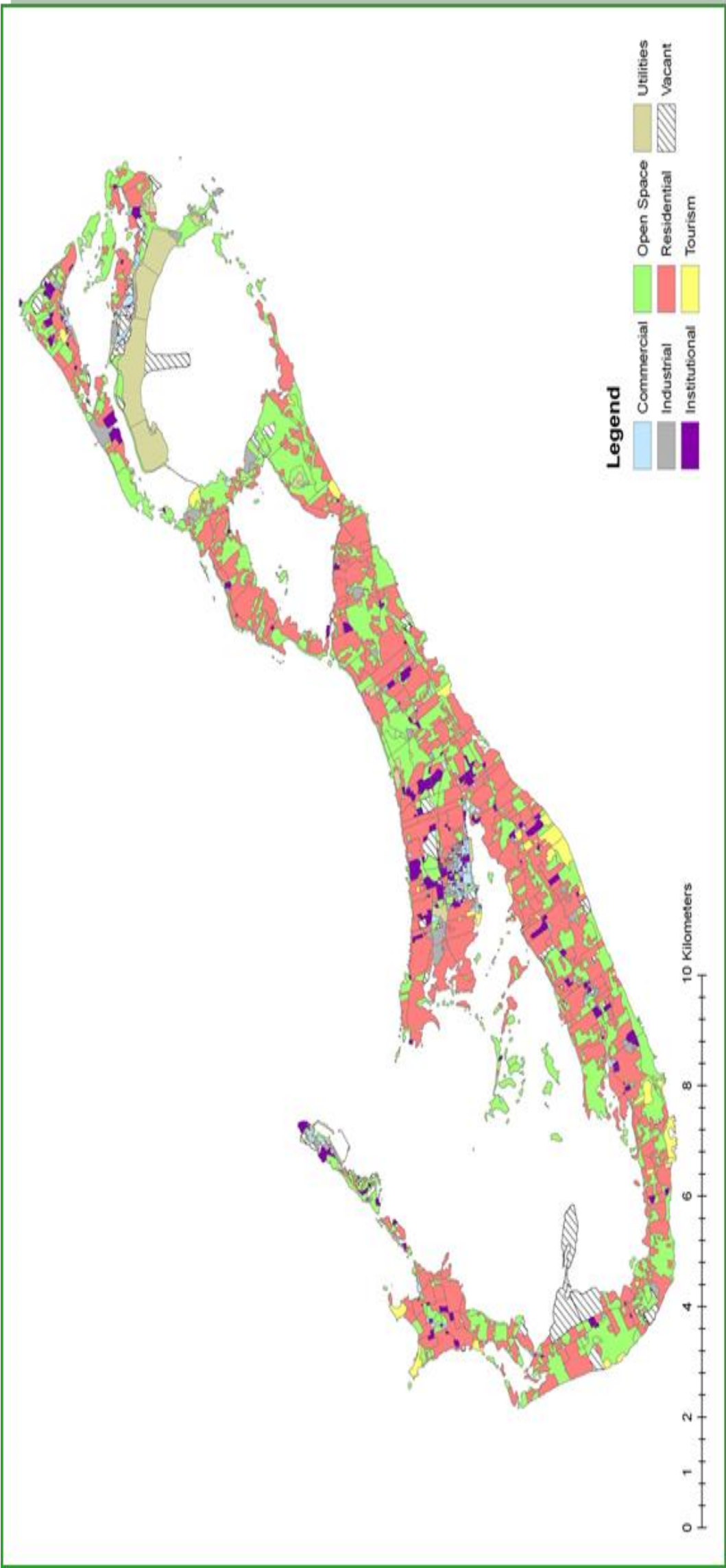
Main Use / Sub-Category	Parish/Town/City										
	St. George's	Town of St. George	Hamilton	Smith's	Devonshire	Pembroke	The City of Hamilton	Paget	Warwick	South- ampton	Sandy's
Tourism	4.0	10.2	18.7	15.3	14.2	15.7	—	112.1	8.7	88.7	44.7
Cottage colonies	4.0	10.2	18.7	15.3	14.2	3.0	—	62.4	8.7	23.6	44.7
Hotels	—	—	—	—	—	12.7	—	49.8	—	65.2	—
Industrial	99.6	8.9	47.5	21.1	18.9	55.6	12.3	4.1	18.0	21.8	13.9
General	66.6	1.3	11.5	9.5	11.3	52.9	6.0	0.7	7.8	18.9	13.9
Light industrial	33.0	7.6	—	—	7.5	2.7	6.4	3.4	1.0	2.9	—
Quarry	—	—	36.0	11.6	—	—	—	—	9.2	—	—
Vacant	206.5	29.1	14.0	12.2	19.5	60.5	3.6	3.1	30.8	130.2	219.4
Vacant land	155.4	10.3	—	12.2	19.5	60.5	3.6	—	21.3	130.2	197.1
Vacant buildings	51.2	18.8	14.0	—	—	—	—	3.1	9.5	—	22.3
Commercial	32.5	10.6	11.0	2.9	10.8	27.2	66.8	16.4	9.1	10.2	27.0
Office	19.0	—	—	—	4.2	15.1	16.9	6.6	—	—	—
Retail	13.5	6.3	11.0	2.9	6.6	12.1	17.7	9.8	9.1	10.2	27.0
Mixed-use	—	4.3	—	—	—	—	32.2	—	—	—	—

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 13,430.4 acres (low tide mark) in 2007 as a result of the more accurate 2003 Topographic Mapping Database.

Map 7.1

LAND USE BY PARISH, CITY AND TOWN IN ACRES, 2001



Source: Department of Planning, Land Use Survey 2001

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 4,236.1 km², of which 7.0 per cent or 294.7 km² is classified as protected marine area (Table 8.1 and Chart 8.1).
- There are 29 protected dive sites located in Bermuda covering an area of 13.9 km² (Table 8.2).
- A total of 12 marine parks have been established in Bermuda covering an area of 1.9 km² (Table 8.2).
- There are two fisheries seasonal protected areas that measure 153.4 km² (Table 8.2).
- Two coral reef preserves occupy a total of 131.1 km² (Table 8.2).

FISHERIES

- Fish landings, excluding bait and shellfish, totalled 335.1 metric tonnes (mT) in 2022, a decrease of 6.8 per cent from 2021 (Table 8.4).
- Although the Tuna and pelagic group remained the most popular catch at 168.0 mT, Groupers experienced the largest increase in fish landings from 2021 to 2022 (28.3%) (Table 8.4).
- In 2022, 341 registered fishermen spent a total of 72,680 hours at sea. While there was a 7.9 per cent increase in registered fishermen, 4,553 fewer hours were spent at sea (Table 8.5).

Table 8.1

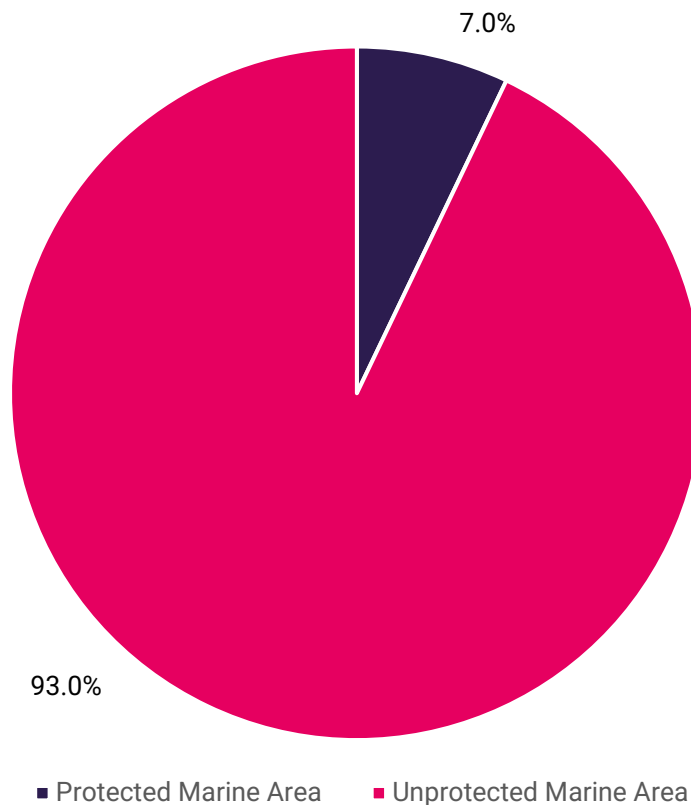
TOTAL AND PROTECTED MARINE AREA, 2016

Indicator	
Total land and marine area (km ²)	4,289.7
Total marine area (km ²)	4,236.1
Protected marine area (km ²)	294.7
Protected marine area as a % of total marine area	7.0
Protected marine area as a % of total land and marine area	6.9

Source: Department of Planning, Land Use Survey 2016

Chart 8.1

PROTECTED MARINE AREA AS A PERCENTAGE OF TOTAL MARINE AREA, 2016



Source: Department of Planning, Land Use Survey 2016

Table 8.2

MARINE PROTECTED AREAS BY CATEGORY AND AREA, 2001

Marine Protected Areas	Area (km ²)	Marine Protected Areas	
		Protected Dive Sites	Area (km ²)
Coral Reef Preserves			
Subtotal	131.1	Subtotal	13.9
North Shore Coral Reef Preserve	126.3	North Rock	3.1
South Shore Coral Reef Preserve	4.8	SW Breaker	1.1
		Eastern Blue Cut	1.1
Fisheries Seasonal Protected Areas		Pelinaion	0.8
Subtotal	153.4	Hermes	0.8
South Western Area	114.7	Constellation	0.8
North Eastern Area	38.7	Cristobal Colon	0.3
		NE Breaker	0.3
Marine Parks		Taunton	0.3
Subtotal	1.9	Aristo	0.3
Castle Island Marine Park	0.7	Mills Breaker	0.3
South Shore Marine Park	0.4	Cathedral	0.3
Cooper's Island Marine Park	0.3	Kate	0.3
Walsingham Marine Park	0.2	Tarpon Hole	0.3
John's Smiths Bay Marine Park	0.1	Marie Celeste	0.3
Tobacco Bay Marine Park	0.1	North Carolina	0.3
Spittal Pond Marine Park	0.1	Airplane	0.3
Church Bay Marine Park	0.0	Blanche King	0.3
Astwood Bay Marine Park	0.0	Darlington	0.3
Shelly Bay Marine Park	0.0	L'Herminie	0.3
Daniel's Head Marine Park	0.0	Lartington	0.3
Somerset Long Bay Marine Park	0.0	Montana	0.3
		Snake Pit	0.3
		Hog Breaker	0.3
		Caraquet	0.3
		Madiana	0.3
		Commissioner's Point	0.1
		Xing Da	0.1
		Vixen	0.0
Marine Protected Areas	Area (km²)		
Merged marine protected areas (no overlaps) ¹	294.7		
Territorial area (net) ²	4,236.1		

Source: Department of Planning, Land Use Survey 2001

¹ Total marine protected area does not equal to the sum of the sub-totals as it excludes any overlapping areas (5.3 km²) to avoid double counting.

² Territorial area (net) means total water area and does not include the land area of 53.6 km².

Table 8.3.1

MARINE PROTECTED AREAS AROUND BERMUDA, 2001

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.

Source: Department of Environmental Protection

Table 8.3.2

MARINE PROTECTED AREAS AROUND BERMUDA, 2001

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
	1990			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.
The North Eastern Area	It was merged in 2005 with the Eastern Area and redesigned.	Yes	Yes	
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

MARINE PROTECTED AREAS, 2001

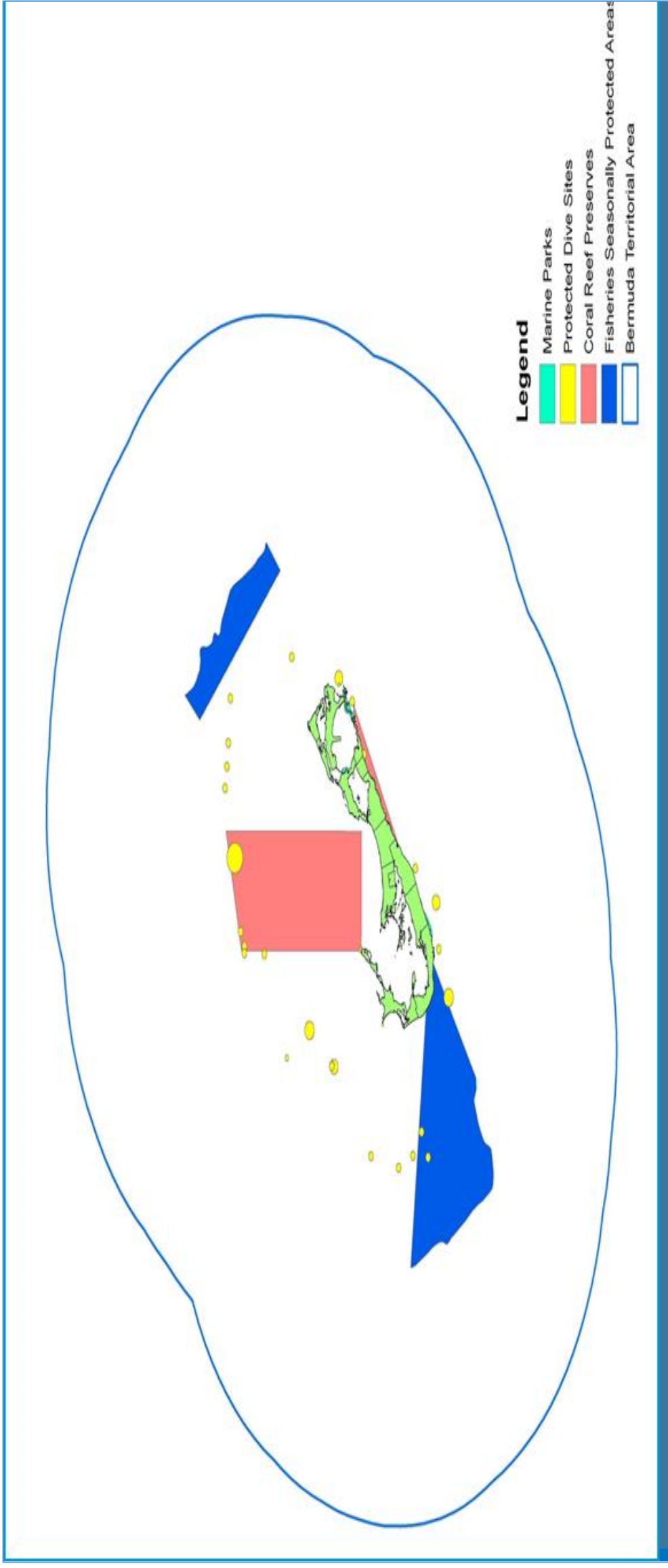


Table 8.4

QUANTITY OF FISH LANDINGS BY TYPE, 2018–2022

Species Group (mT)	Year				
	2018	2019	2020	2021	2022
Total including bait and shellfish	353.8	376.6	354.6	415.0	389.6
Percentage change (%)	-8.1	+6.4	-5.8	+17.0	-6.1
Total fish	295.5	306.6	289.7	359.5	335.2
Tuna and pelagic	133.9	160.2	143.9	186.8	168.0
Groupers	55.2	49.4	49.2	56.1	72.0
Jacks and related species	40.7	41.6	53.5	53.7	43.9
Snappers	42.1	37.1	27.3	38.9	33.4
Miscellaneous	20.6	15.3	14.3	22.4	17.5
Sharks	3.1	3.0	1.5	1.6	0.3
Bait	32.2	37.6	33.0	34.2	32.2
Shellfish ¹	26.2	32.4	31.9	21.3	22.2

Source: Department of Environmental and Natural Resources, Marine Management Section

¹ Shellfish includes spiny lobster.

Table 8.5

TOTAL CATCH BY HOURS AT SEA, AVERAGE CATCH OF FISHING AREA AND NUMBER OF REGISTERED FISHERMEN, 2018–2022

Indicators	Year				
	2018	2019	2020	2021	2022
Total catch ¹ (mT)	353.8	376.6	354.6	415.0	389.6
Percentage change (%)	-8.1	+6.4	-5.8	+17.0	-6.1
Average catch of fishing area ² (mT per km ²)	0.1	0.1	0.1	0.1	0.1
Total hours at sea	72,231	68,868	67,325	77,233	72,680
Percentage change (%)	-2.4	-4.7	-2.2	+14.7	-5.9
Total number of licences ³	168	167	172	162	162
Percentage change (%)	-3.4	**	+3.0	-5.8	**
Total hours at sea per licence	429.9	412.4	391.4	476.7	448.6
Percentage change (%)	+1.1	-4.1	-5.1	+21.8	-5.9
Total registered fishermen	315	309	342	316	341
Percentage change (%)	-3.1	-1.9	+10.7	-7.6	+7.9

Source: Department of Environmental and Natural Resources, Marine Management Section

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

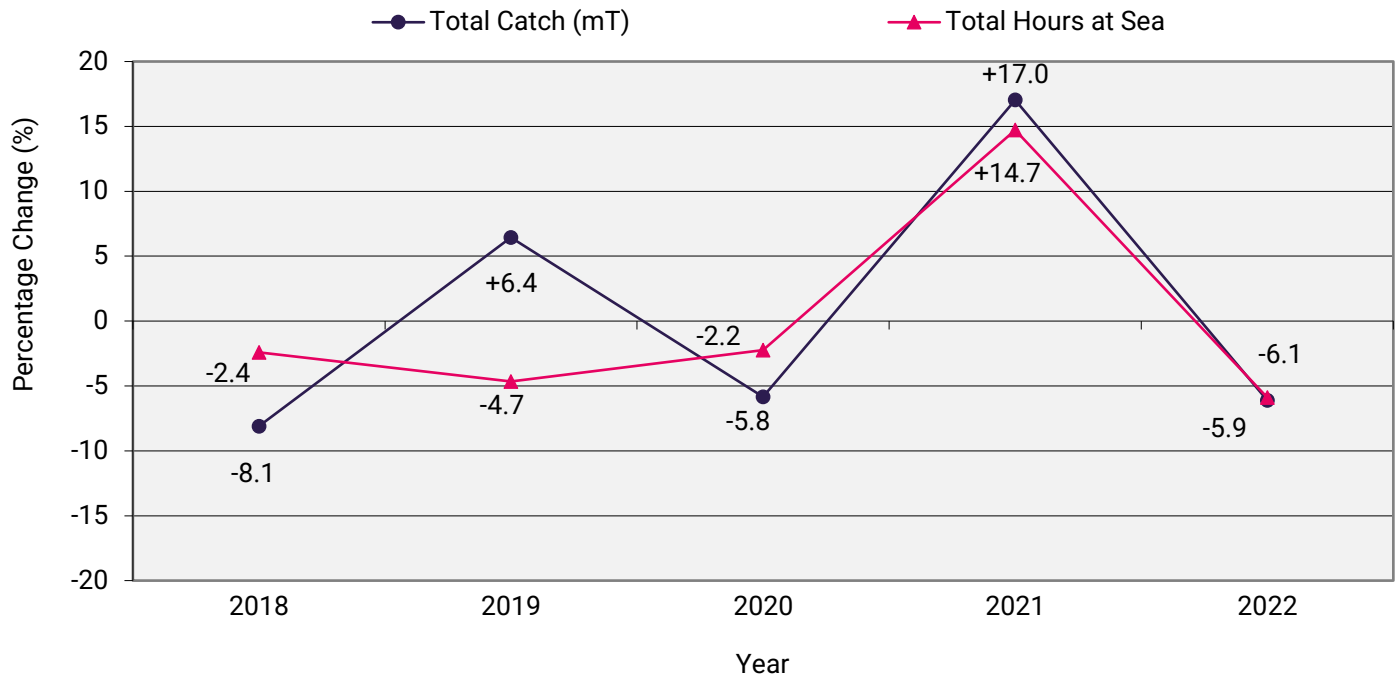
² Total fishing area is estimated as 4,236.1 km² (Department of Planning, see Table 8.1). Fishing area includes the fisheries seasonal protected areas (153.4 km²) which are closed between May 1st and August 31st.

Computation: Average catch of fishing area = Total catch (mT) / Total estimated fishing area of 4,236.1 km².

³ Some licences have a smaller ancillary vessel attached.

Chart 8.2

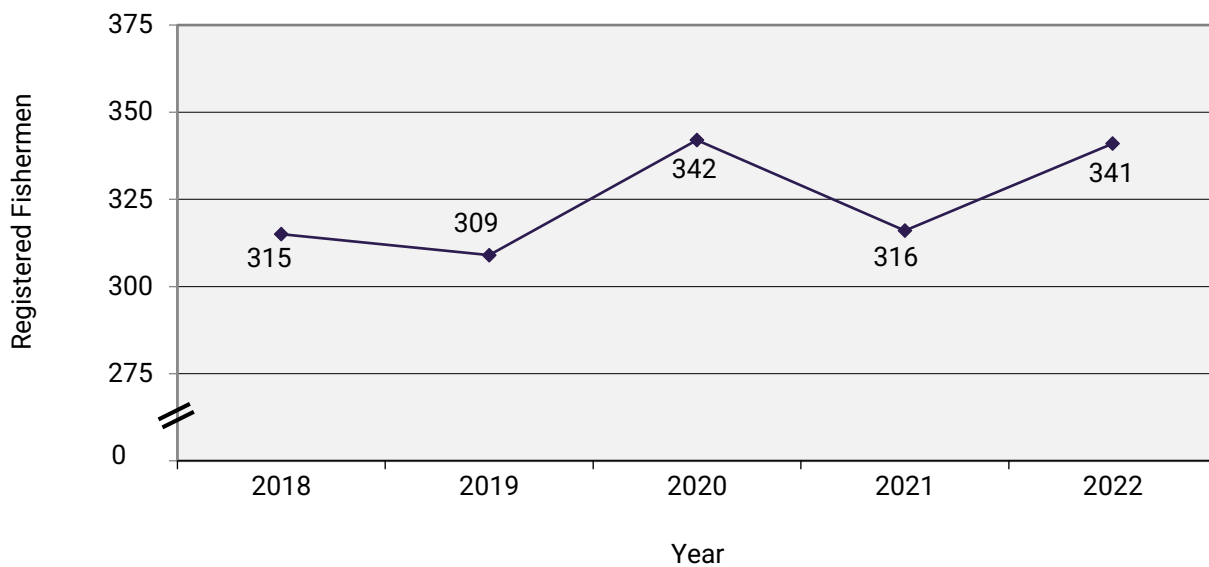
GROWTH IN TOTAL CATCH AND TOTAL HOURS AT SEA, 2018–2022



Source: Department of Environmental and Natural Resources, Marine Management Section

Chart 8.3

NUMBER OF REGISTERED FISHERMEN, 2018–2022



Source: Department of Environmental and Natural Resources, Marine Management Section

Table 8.6

NUMBER OF HOUSEHOLDS AND POPULATION OF COASTAL AREAS FOR SELECTED CENSUS YEARS

Indicators	Census Years				
	1980	1991	2000	2010	2016
Number of households in coastal areas	18,449	22,430	25,148	26,923	28,192
Ten-year growth rate (%)	..	+21.6	+12.1	+7.1	+4.7
Population in coastal areas ¹	54,050	58,460	62,059	64,237	63,779
Ten-year growth rate (%)	..	+8.2	+6.2	+3.5	**

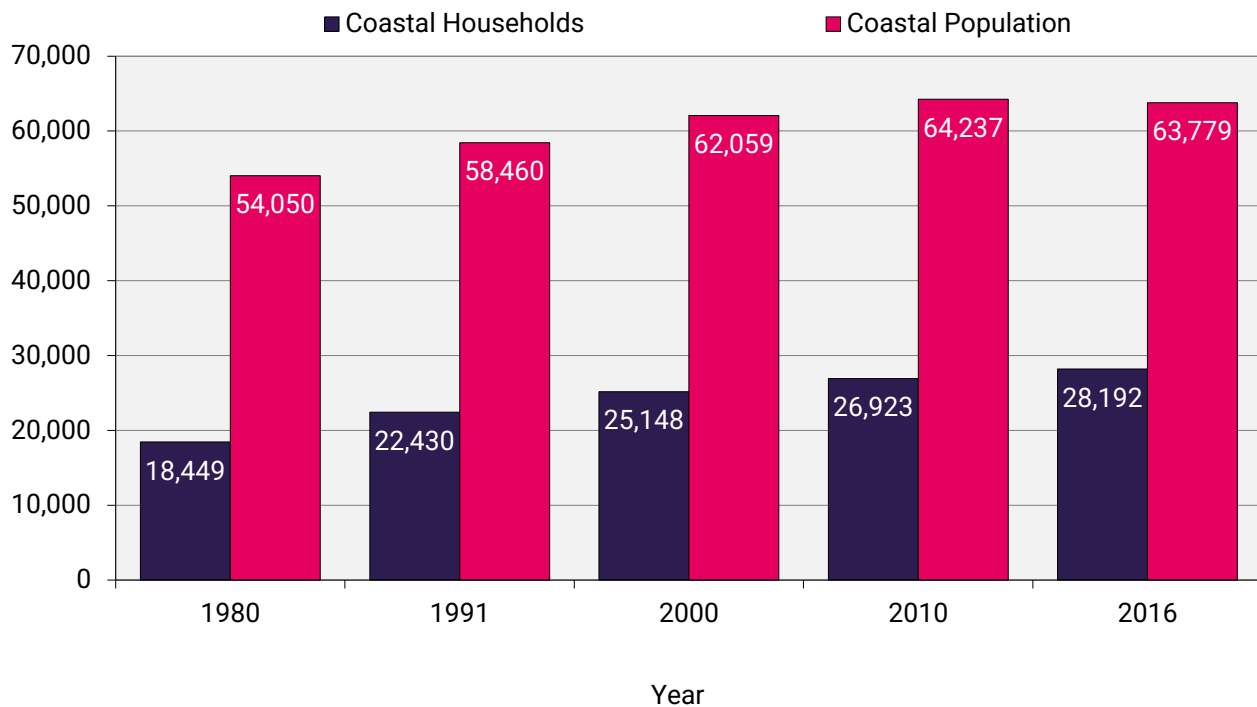
Sources: 1980 to 2016 Population and Housing Censuses

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 SELECTED CENSUS YEARS



Sources: 1980 to 2016 Population and Housing Censuses

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 319.6 km². This represents 7.5 per cent of the total area (6.9% water and 0.6% land) (Table 9.1).
- As a proportion of the total land area (53.6 km²), protected land area represents 46.5 per cent or 24.9 km². Protected water area represents 7.0 per cent of 294.7 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: is 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).

Source: CARICOM Environment Programme

Table 9.1

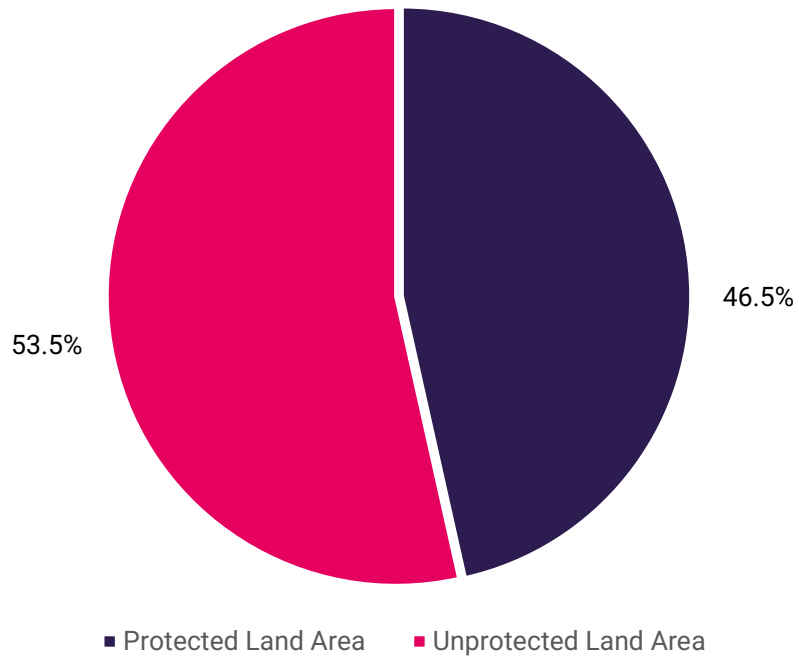
PROTECTED AREAS, 2016

Category	
Total area (km ²)	4,289.7
Total land area (low tide mark) (km ²)	53.6
Total water area (km ²)	4,236.1
Protected land area (km ²)	24.9
Protected land area as a % of total land area	46.5
Protected land area as a % of total area	0.6
Protected water area (km ²)	294.7
Protected water area as a % of total water area	7.0
Protected water area as a % of total area	6.9
Total protected area (land and water) (km ²)	319.6
Total protected area as a % of total area	7.5

Source: Department of Planning, Land Use Survey 2016

Chart 9.1

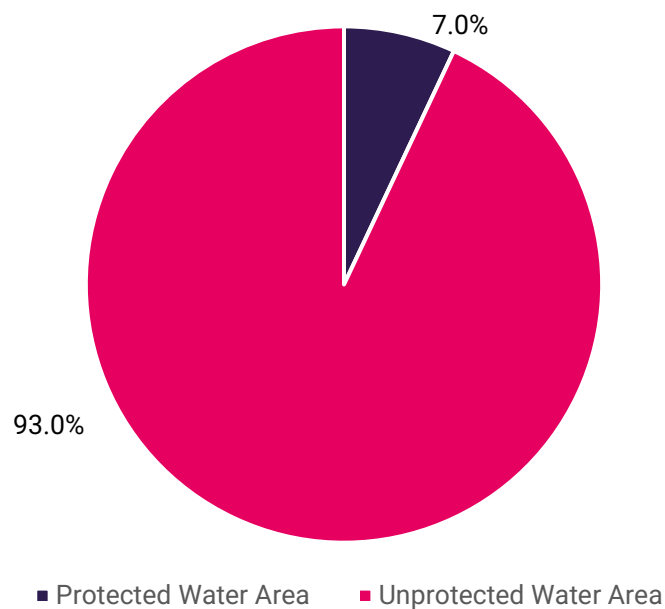
PROTECTED LAND AREA AS A PERCENTAGE OF TOTAL LAND AREA, 2016



Source: Department of Planning, Land Use Survey 2016

Chart 9.2

PROTECTED WATER AREA AS A PERCENTAGE OF TOTAL WATER AREA, 2016



Source: Department of Planning, Land Use Survey 2016

Table 9.2

PROTECTED AREAS BY CATEGORY AND AREA, 2008

Protected Area Category	Acres	km ²
Conservation base zones		
Open space reserve	1,298.1	5.3
Recreation	963.9	3.9
Park	884.6	3.6
Coastal reserve	823.3	3.3
Nature reserve	770.1	3.1
Sub-total	4,740.0	19.2
Conservation areas		
Woodland reserve	983.9	4.0
Agricultural reserve	731.6	3.0
Sub-total	1,715.5	6.9
Cave protection area	1,107.2	4.5
Historic protection area	201.1	0.8
Conservation base zone and conservation areas (no overlap) ¹	6,156.8	24.9
Overlapping area	1,670.1	6.8
Total terrestrial area (low tide mark)	13,430.4	53.6
Water resources protection area ²	4,000.6	16.2

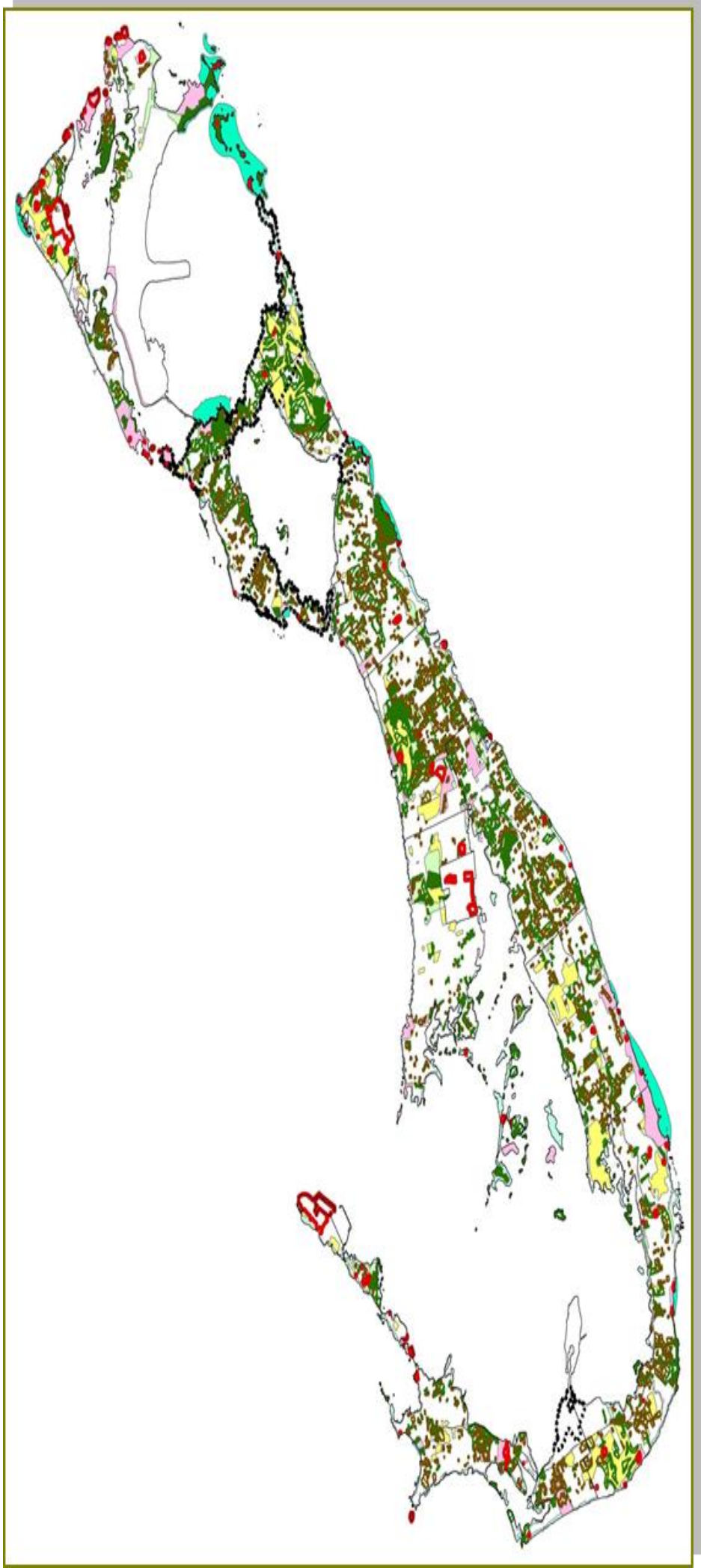
Source: Department of Planning, Bermuda Plan 2008

¹ Total protected area does not equal to the sum of the sub-totals as it excludes any overlapping areas (6.8 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 24.9 km² of protected area but is contained in the total terrestrial area of 53.6 km².

Note: 1 km² = 247.1 acres

TERRESTRIAL PROTECTION AREAS INCLUDING MARINE PARKS, 2008



Legend

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

Source: Department of Planning, Bermuda Plan 2008

FORESTRY

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

FORESTRY

- In 2022, Bermuda's total forest area remained at 4.2 km², accounting for 7.8 per cent of the island's total land area, including woodland reserves. This figure is based on 2016 data (Table 10.1).

NOTE TO READER

Forest: is 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.

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

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).

Source: CARICOM Environment Programme

Table 10.1

PROTECTED FOREST AREA AS A PERCENTAGE OF TOTAL LAND AREA, 2016

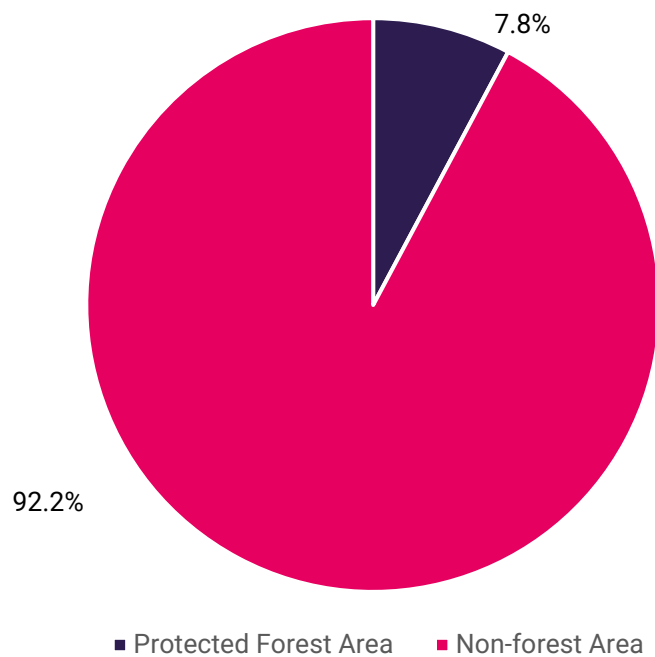
Protected Area Category	Area km ²
Total forest area	4.2 ¹
Total land area	53.6
Protected forest area as a % of total forest area	100.0
Protected forest area as a % of total land area	7.8

Source: Department of Planning

¹ 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 CONCENTRATIONS

- Bermuda contains six 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 (Table 11.3).

Table 11.1

ANNUAL AIR EMISSIONS FROM TYNES BAY WASTE TO ENERGY INCINERATOR, 2018–2022

Pollutant	Year				
	2018	2019	2020	2021	2022
VOCs (mg/Nm ³)	0.2	0.5	..	..	..
NO ₂ (mg/Nm ³)	322.7	353.3	..	..	..
SO ₂ (mg/Nm ³)	1.7	69.4	..	..	..
Lead (mg/Nm ³)	0.0	0.3	..	..	..
Particulate Matter (mg/Nm ³)	2.8	39.6	..	..	..

Source: Department of Environmental Protection

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

.. Data from Tynes Bay was not available from 2020 to 2022 due to COVID-19.

Table 11.2

AVERAGE CONCENTRATIONS FOR AMBIENT AIR MONITORING SITES, 2020-2022

Pollutants	Units	2020						2021				2022					
		Prospect	East Broadway	Cemetery Lane (BDA#1) (Belco-Operated IS014001)	Langton Hill (BDA#2) (Belco-Operated IS014001)	Ocean Lane (BDA#4) (Belco-Operated)	BIOS	Prospect	East Broadway	Cemetery Lane (BDA#1) (Belco-Operated IS014001)	Langton Hill (BDA#2) (Belco-Operated IS014001)	Ocean Lane (BDA#4) (Belco-Operated)	BIOS				
Hourly	NO ₂	3.6	4.8	6.0	3.0	-	1.7	6.2	4.3	4.9	6.2	-	1.7	7.0	3.4	4.0	6.6
	SO ₂	1.4	-	2.4	2.4	-	2.0	0.9	0.9	2.6	11.1	-	3.2	0.5	2.3	11.2	10.1
	PM ₁₀	16.0	15.6	10.7	11.5	-	17.6	14.2	10.7	12.3	15.1	-	15.4	13.8	10.4	12.4	14.5
	PM _{2.5}	4.9	12.1	-	-	-	3.8	14.4	-	-	-	-	3.7	13.8	-	-	-
	TSP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Hour	NO ₂	-	-	6.0	3.1	-	-	-	4.2	4.4	5.9	-	1.5	7.1	3.2	3.3	6.1
	SO ₂	-	-	2.4	25.0	-	-	-	0.9	9.3	10.7	-	3.3	0.4	2.3	6.9	10.0
	PM ₁₀	18.5	21.8	10.8	11.5	-	18.6	22.5	10.0	11.9	14.7	18.6	15.6	13.7	9.7	12.1	14.1
	PM _{2.5}	-	-	-	-	-	-	-	-	-	-	-	3.0	13.9	-	-	-
	TSP	-	-	16.1	16.8	-	-	-	-	-	-	-	-	-	-	-	-
1-year	NO ₂	3.6	4.8	6.0	3.0	-	1.4	6.2	4.3	4.9	6.2	-	1.7	7.0	3.4	4.0	6.6
	SO ₂	1.4	-	2.4	2.4	-	1.2	0.6	0.9	2.6	11.1	-	3.2	0.5	2.3	11.2	10.1
	PM ₁₀	13.4	13.6	10.8	11.5	16.6	17.6	14.1	10.7	12.3	15.1	18.6	15.4	13.8	10.4	12.4	14.5
	PM _{2.5}	4.9	12.1	-	-	-	3.6	14.4	-	-	-	-	3.7	13.8	-	-	-
	TSP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: Department of Environmental Protection

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

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

Note: East Broadway monitoring station had a new PM_{2.5} sensor installed in November 2017.

† - The second PM₁₀ BAM-1020 sensor operated at East Broadway station, which is considered a US EPA Federal Equivalent Method, demonstrated an exceedance of the annual average PM₁₀ concentration at 33.8µg/m³.

Table 11.3

MAXIMUM CONCENTRATIONS FOR AMBIENT AIR MONITORING SITES, 2020-2022

Pollutants	2020					2021					2022								
	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)	Ocean Lane (BDA#4) (Belco-Operated)	BIOS	Prospect ****	East Broadway ****	Cemetery Lane (BDA#1) (Belco-Operated ISO14001)	Langton Hill (BDA#2) (Belco-Operated ISO14001)	Ocean Lane (BDA#4) (Belco-Operated)***	BIOS ****		
Hourly	NO ₂ µg/m ³	36.8	37.6	271.3	86.9	-	49.0	46.3	71.6	86.8	105.2	-	44.6	43.2	74.0	103.7	331.2	-	
	SO ₂ µg/m ³	37.3	9.5	65.5	272.8	-	49.1	23.6	8.6	158.8	299.6	-	42.9	15.6	15.4	205.7	292.9	-	
	PM ₁₀ µg/m ³	-	112.0	202.0	94.8	225.1	-	70.0	177.0	66.7	268.5	128.7	-	64.0	89.0	122.2	341.2	320.8	-
	PM _{2.5} µg/m ³	-	261.8	63.0	-	-	-	39.0	58.0	-	-	-	-	15.0	44.0	-	-	-	-
	TSP µg/m ³	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Hour	NO ₂ µg/m ³	-	-	91.9	55.4	-	-	-	22.5	52.1	69.0	-	16.8	20.7	23.3	37.4	69.2	-	
	SO ₂ µg/m ³	-	-	30.2	130.2	-	-	-	2.4	74.0	123.1	-	16.4	5.5	7.1	73.2	96.8	-	
	PM ₁₀ µg/m ³	44.2	46.4	40.7	41.5	46.4	46.9	47.5	43.9	46.6	46.2	57.7	31.6	38.7	37.3	40.9	32.7	29.8	
	PM _{2.5} µg/m ³	-	-	-	-	-	-	-	-	-	-	-	7.7	23.9	-	-	-	-	
	TSP µg/m ³	-	-	28.3	29.7	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total number of exceedances of the limits set in the Clean Air Regulations 1993 over each year		1 **	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	

Source: Department of Environmental Protection

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

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

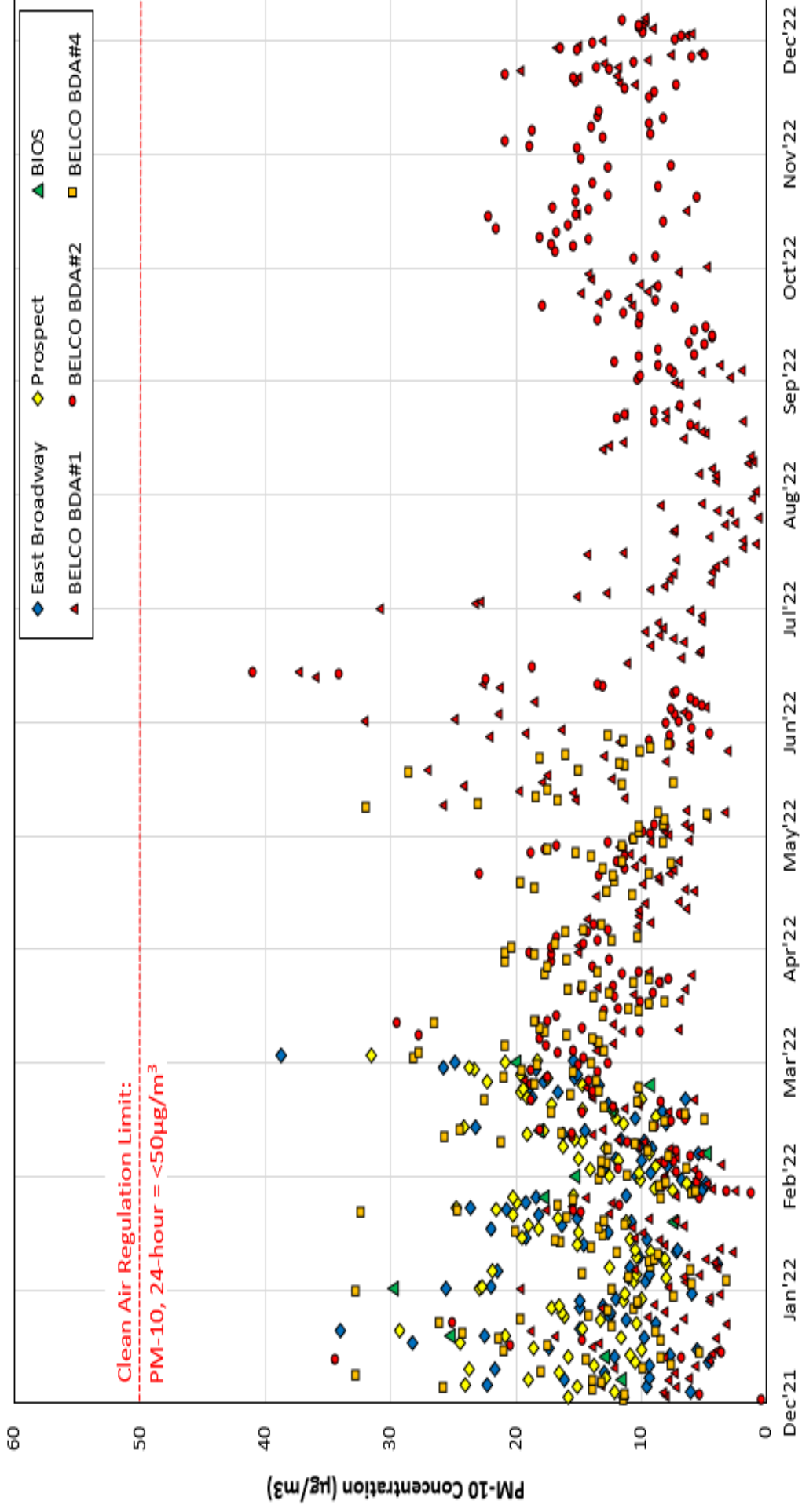
* 10 of the 17 exceedances occurred before calibration highlighted a problem with the instruments.

† A second PM₁₀ sensor at East Broadway that uses a US EPA Federal Equivalent Method records data every hour and identified a total of 10 exceedances of 24-hour PM₁₀ over 2017.

** A second PM₁₀ sensor at prospect monitoring that uses a US EPA Federal Equivalent Method records one exceedance of the 24-hour PM₁₀ limit at 51.0/m³ on the 31st July 2020.

Figure 11.1

24-HOUR AVERAGE PM₁₀ CONCENTRATION, 2022



Source: Department of Environmental Protection

WASTE

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

- In 2022, the amount of waste totalled 71,200 mT. This represents a decrease of 2.7 per cent over the 73,200 mT of waste in 2021 (Table 12.1).
- In 2022, an estimated 1,200 mT of waste was recycled, 14,000 mT was composted, 46,000 mT was incinerated and 10,000 mT was landfilled (Table 12.2).
- There were 210 container loads of materials recycled between 2019 and 2022. One hundred ten container loads of special waste items were processed and exported for the United States recycling market (Chart 12.1). The remaining 100 container loads of glass remained in Bermuda and was re-used on-island as a drainage medium.
- Bermuda exported an estimated 1,698,000 pounds of hazardous waste in 2022 (Table 12.3).

NOTE TO READER

Household Waste: 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: 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.

Source: Waste and Litter Control Act, 1987

Table 12.1

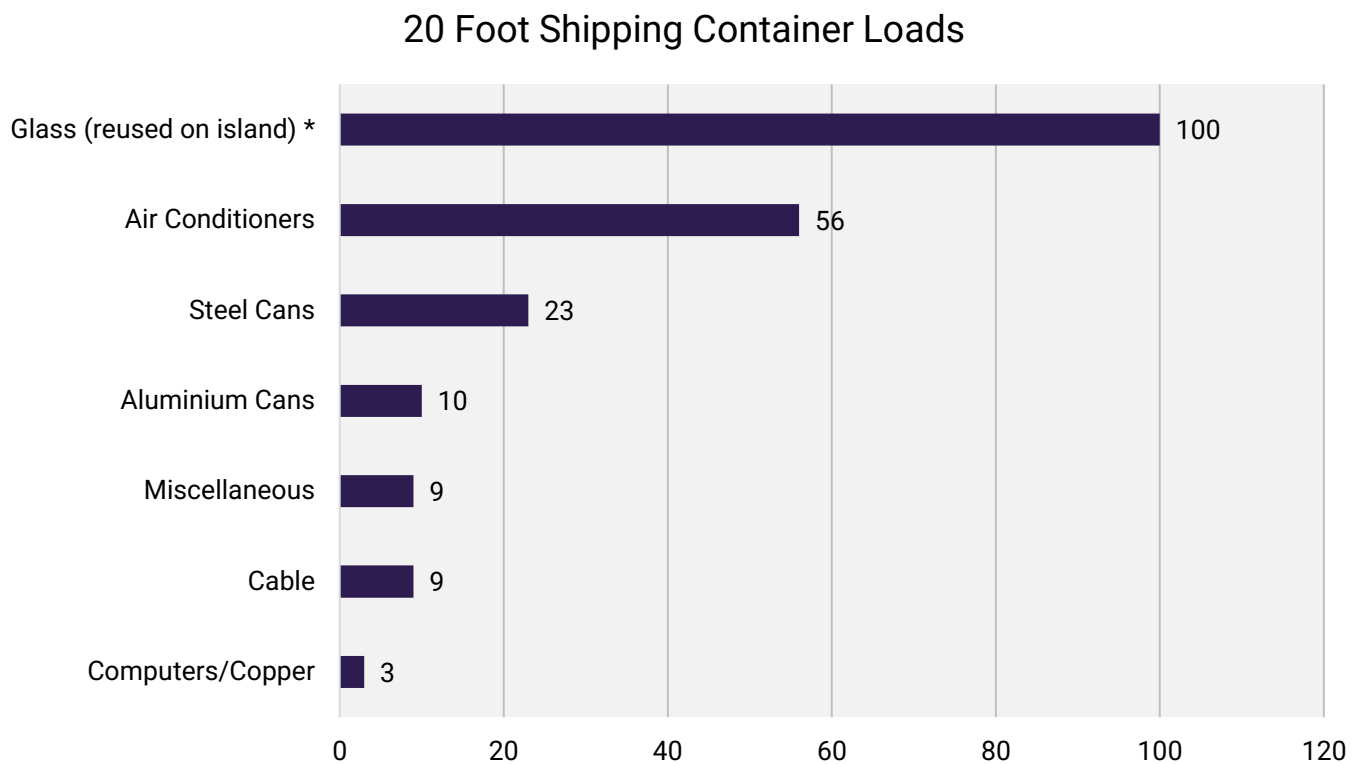
GENERATION OF WASTE BY SOURCE, 2018–2022

Indicator (1,000 mT)	Year				
	2018	2019	2020	2021	2022
Total amount of waste	93.8	86.4	69.2	73.2	71.2
Waste from households	31.3	28.8	23.1	24.4	23.7
Waste from other origins	62.5	57.6	46.1	48.8	47.5

Source: Department of Works and Engineering, Waste Management Section

Chart 12.1

ESTIMATED EXPORT OF RECYCLABLE WASTE, 2019–2022



Source: Department of Works and Engineering, Waste Management Section

*All Glass is reused on-island as a drainage medium.

Table 12.2

MANAGEMENT OF WASTE, 2018–2022

Indicator (1,000 mT)	Year				
	2018	2019	2020	2021	2022
Total amount of waste	93.8	86.4	69.2 r	73.2 r	71.2
Amounts going to					
Recycling	1.5	0.4	1.2	1.2	1.2
Composting	13.0	11.0	11.0	14.0	14.0
Incineration	69.3	65.0	47.0 r	48.0 r	46.0
Landfilling	10.0 e	10.0 e	10.0 e	10.0 e	10.0 e

Source: Department of Works and Engineering, Waste Management Section

Table 12.3

MANAGEMENT OF SPECIAL WASTE, 2018–2022

Indicator (1,000 lbs.)	Year				
	2018	2019 e	2020 e	2021 e	2022 e
Stock of hazardous waste at the beginning of the year	110.0 r	248.0 r	272.0 r	281.0 r	259.0
Hazardous waste generated during the year	1,500.0	1,800.0	1,800.0	1,800.0	1,800.0
Hazardous waste exported during the year:					
Recycling	633.0	720.0 r	735.0 r	766.0 r	755.0
Incineration	-	-	-	-	-
Landfilling	729.0*	1,056.0*	1,056.0	1,056.0	1,056.0
Total Hazardous Waste Exported	1,362.0	1,776.0 r	1,791.0 r	1,822.0 r	1,811.0
Stock of hazardous waste at the end of the year	248.0 r	272.0 r	281.0 r	259.0 r	248.0

Source: Department of Works and Engineering, Waste Management Section

* Increase in Landfilling of Special Waste is the result of the export of a large backlog of asbestos to the USA where it is being landfilled in Title D regulated landfill facilities.

Table 12.4

MANAGEMENT OF WASTE BY TYPE, 2018–2022

Indicator	Year				
	2018 e	2019 e	2020 e	2021 e	2022 e
Total (%)	100.0	100.0	100.0	100.0	100.0
Paper, paperboard	27.0	27.0	27.0	27.0	27.0
Textiles	4.0	4.0	4.0	4.0	4.0
Plastics	19.0	19.0	19.0	19.0	19.0
Glass	13.0	13.0	13.0	13.0	13.0
Metals	5.0	5.0	5.0	5.0	5.0
Other inorganic material	8.0	8.0	8.0	8.0	8.0
Organic material	24.0	24.0	24.0	24.0	24.0

Source: Department of Works and Engineering, Waste Management Section

Waste audits are conducted every 2 to 4 years by the Waste Management Section of the Ministry of Public Works.

e = estimated data based on previous years' data.

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 2022, the total volume of precipitation in Bermuda was 72.0 mio m³/y (Table 13.1). This represents a 4.8 per cent decrease from the level received in 2021.

NOTE TO READER

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.

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

Regular Freshwater Resources 95.0% 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 95.0% 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.

Renewable Freshwater Resources: equal internal flow plus any inflow of surface and groundwaters.

Sources: United Nations Statistics Division and United Nations Environment Programme

Table 13.1

RENEWABLE FRESHWATER RESOURCES, 2018–2022

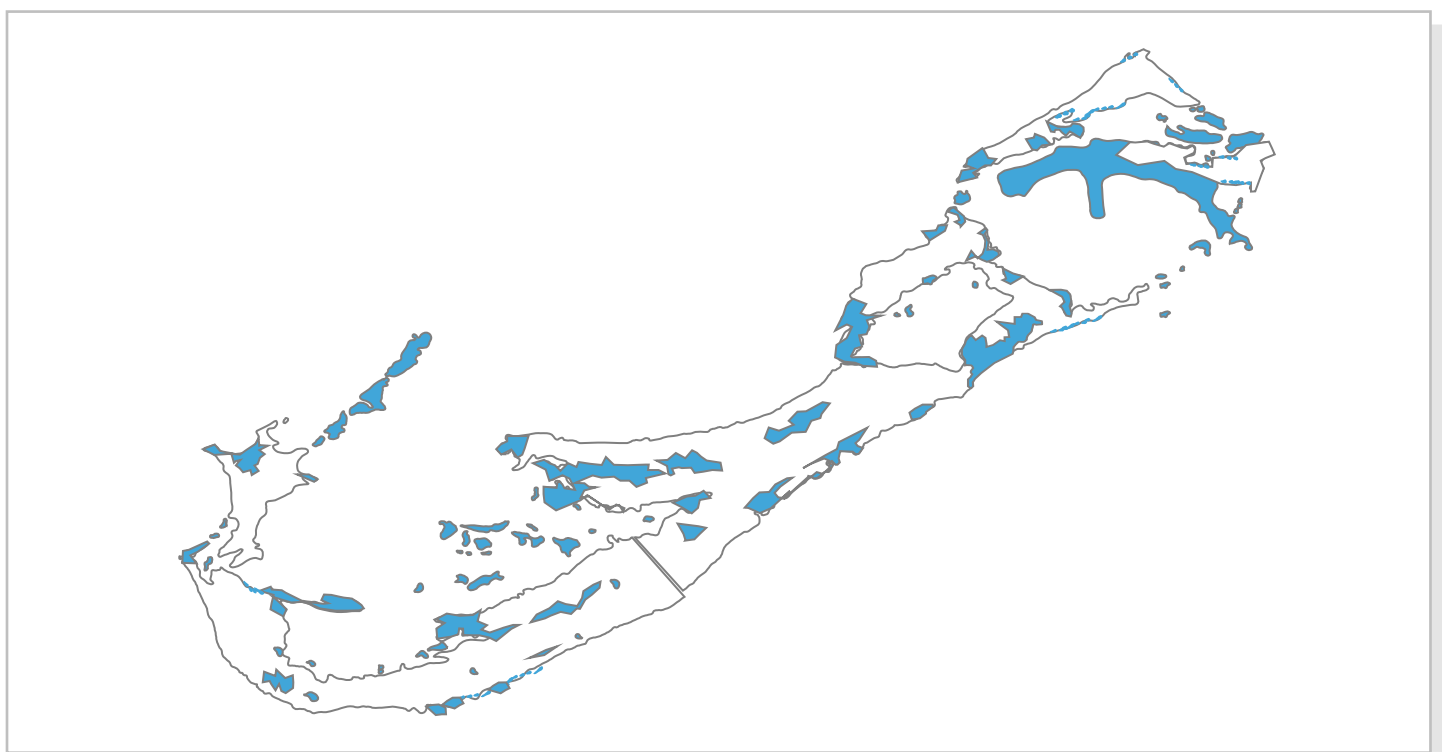
Category (mio m ³ /y)	Year				
	2018	2019	2020	2021	2022
Precipitation ¹	75.0	74.9	65.5	75.6	72.0
Actual evapotranspiration	51.0	50.9	44.6	51.4	..
Internal flow	24.0	24.0	20.9	24.2	..
Renewable freshwater resources	3.6	3.6	3.1	3.6	..
Regular freshwater resources 95.0% of the time	2.6	2.6	2.6	2.6	..

Source: Department of Environmental Protection

¹ Bermuda is frost-free; precipitation consists of rainfall only. Precipitation = annual rainfall in m (from BWS), multiplied by land area of 53.6 sq. km.

Map 13.1

WATER RESOURCES PROTECTION AREAS, 2022



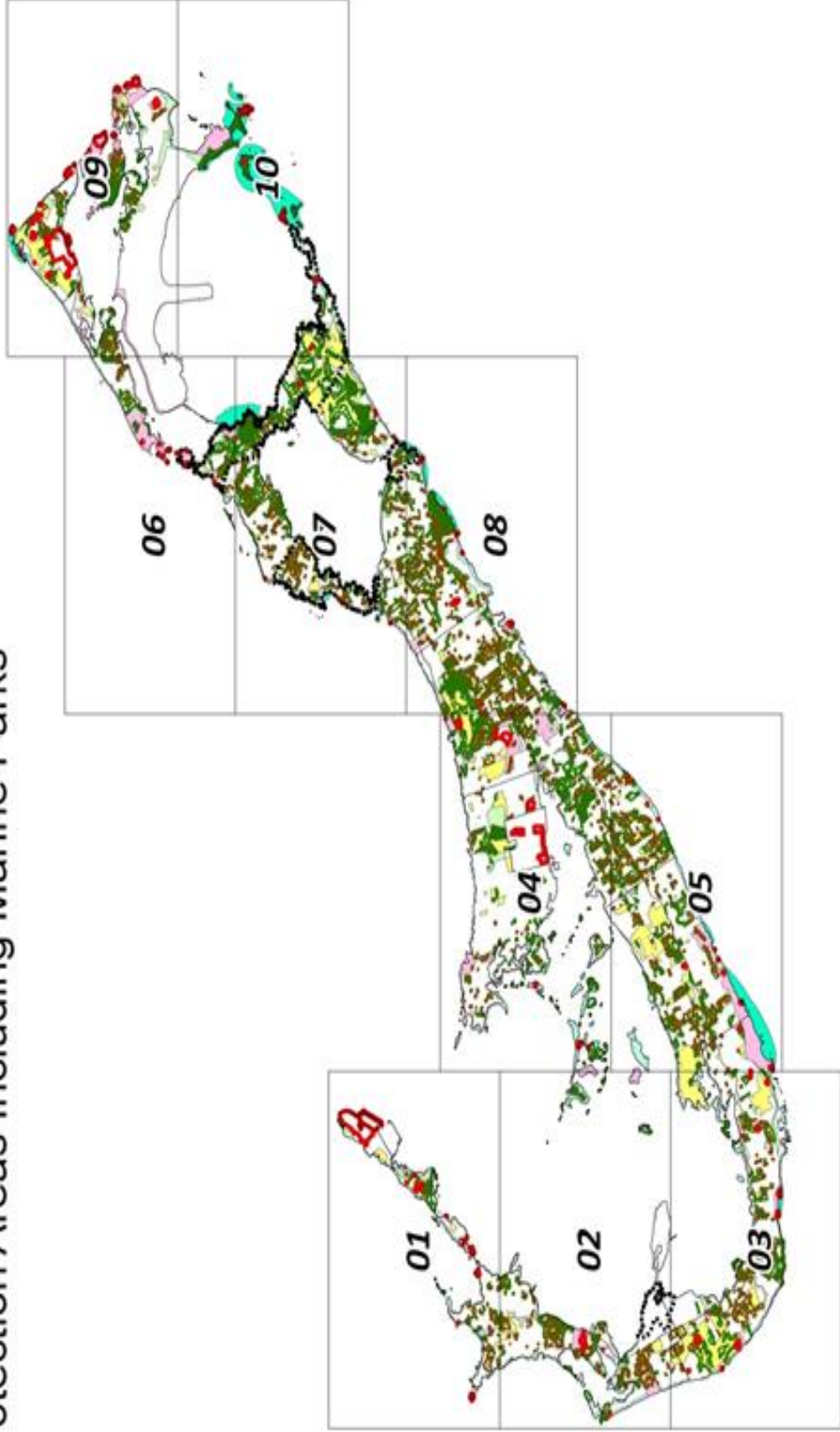
LEGEND

■ Water Resources Protection Area

Source: Department of Planning

APPENDIX

Terrestrial Protection Areas Including Marine Parks



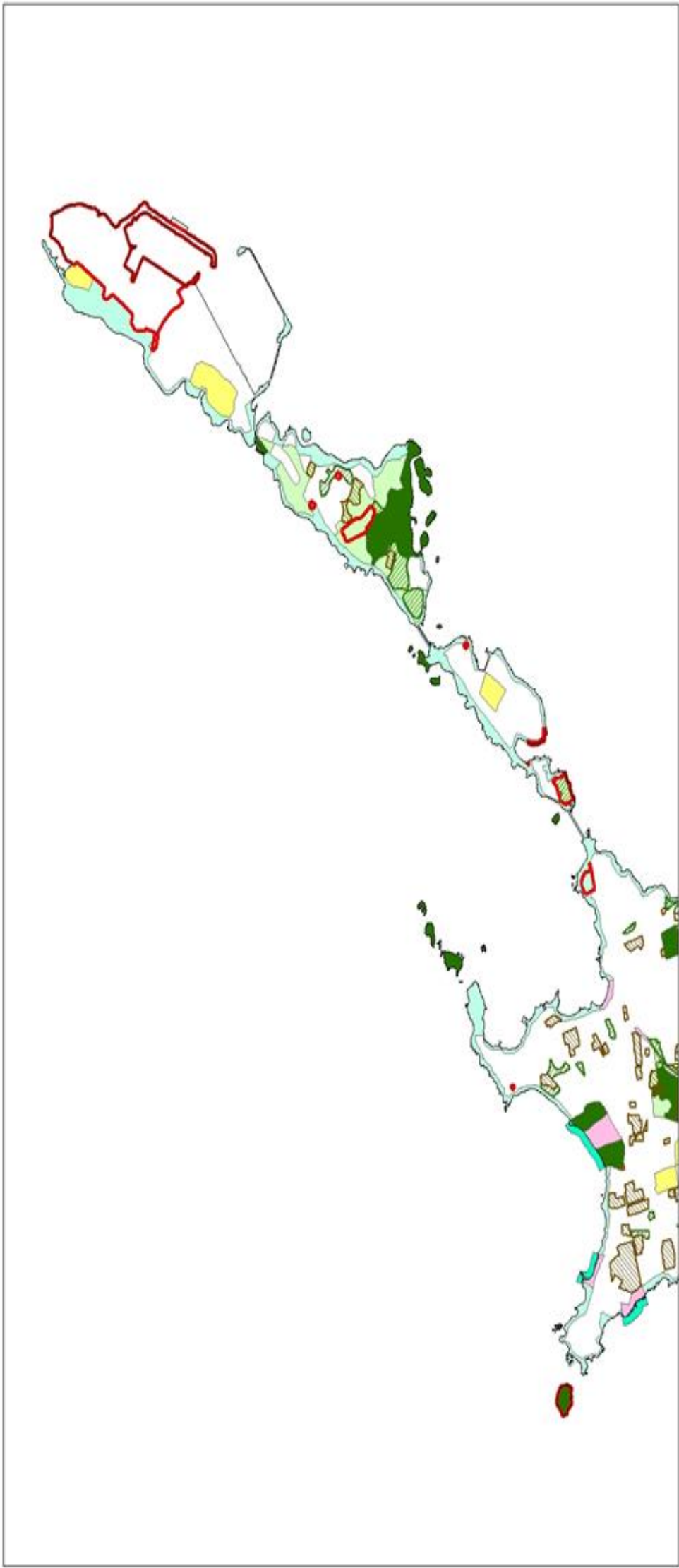
Legend

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

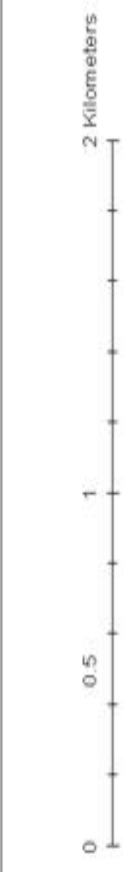
MAP Key

0 2.5 5 10 Kilometers

Source: Department of Planning

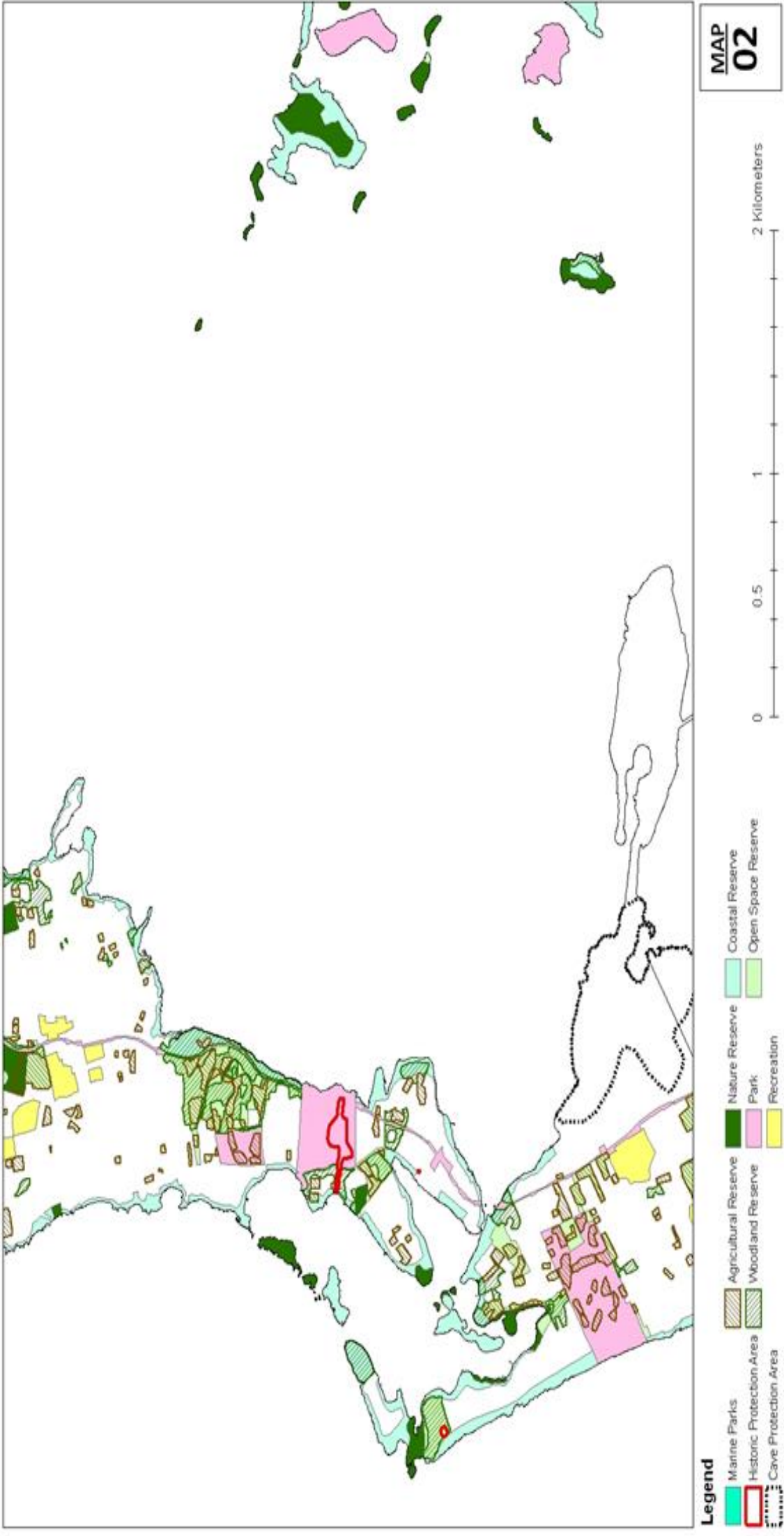


MAP
01



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

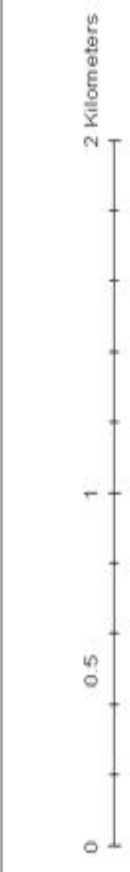
Source: Department of Planning



Source: Department of Planning

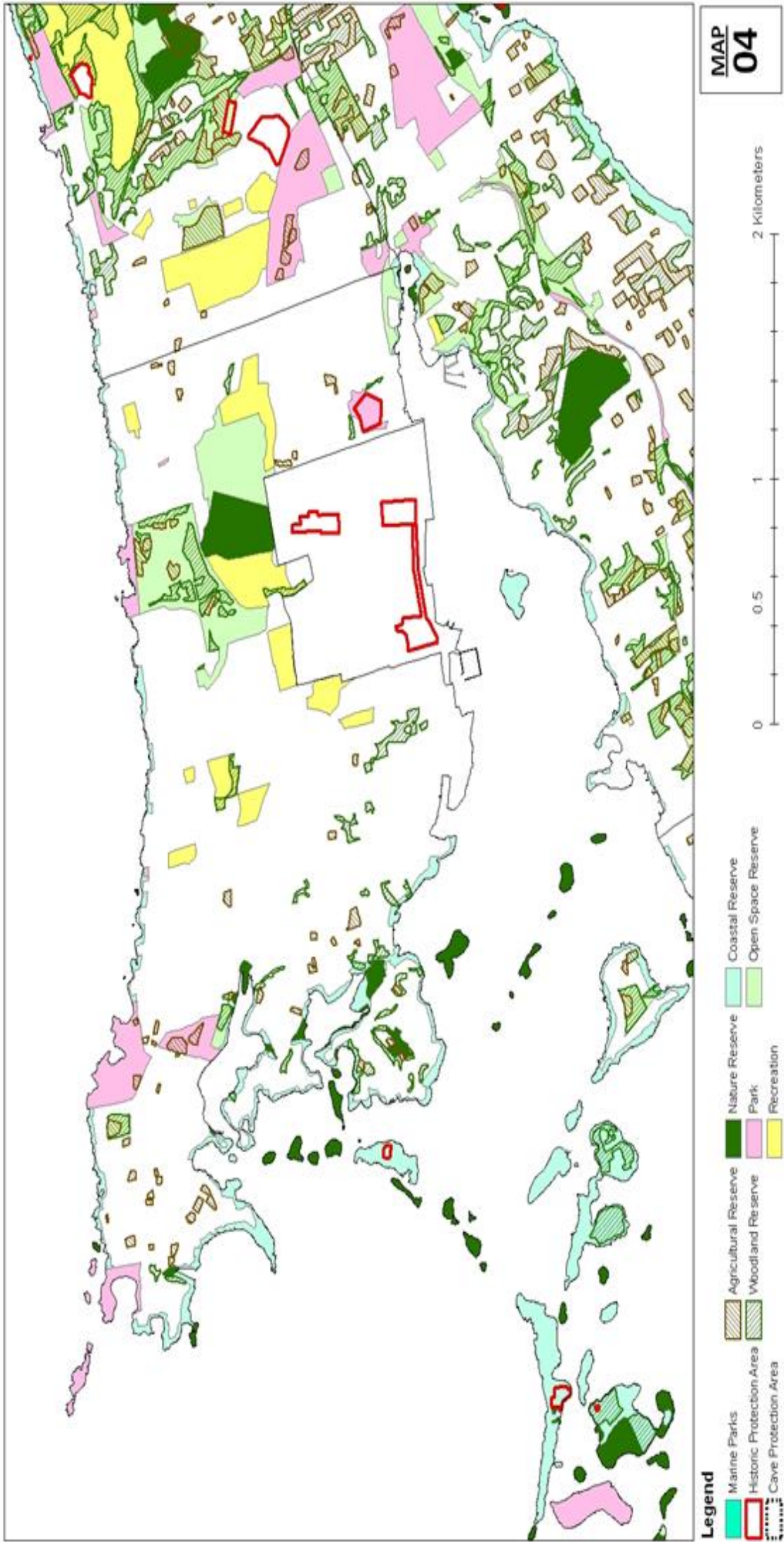


MAP
03



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

Source: Department of Planning



Source: Department of Planning



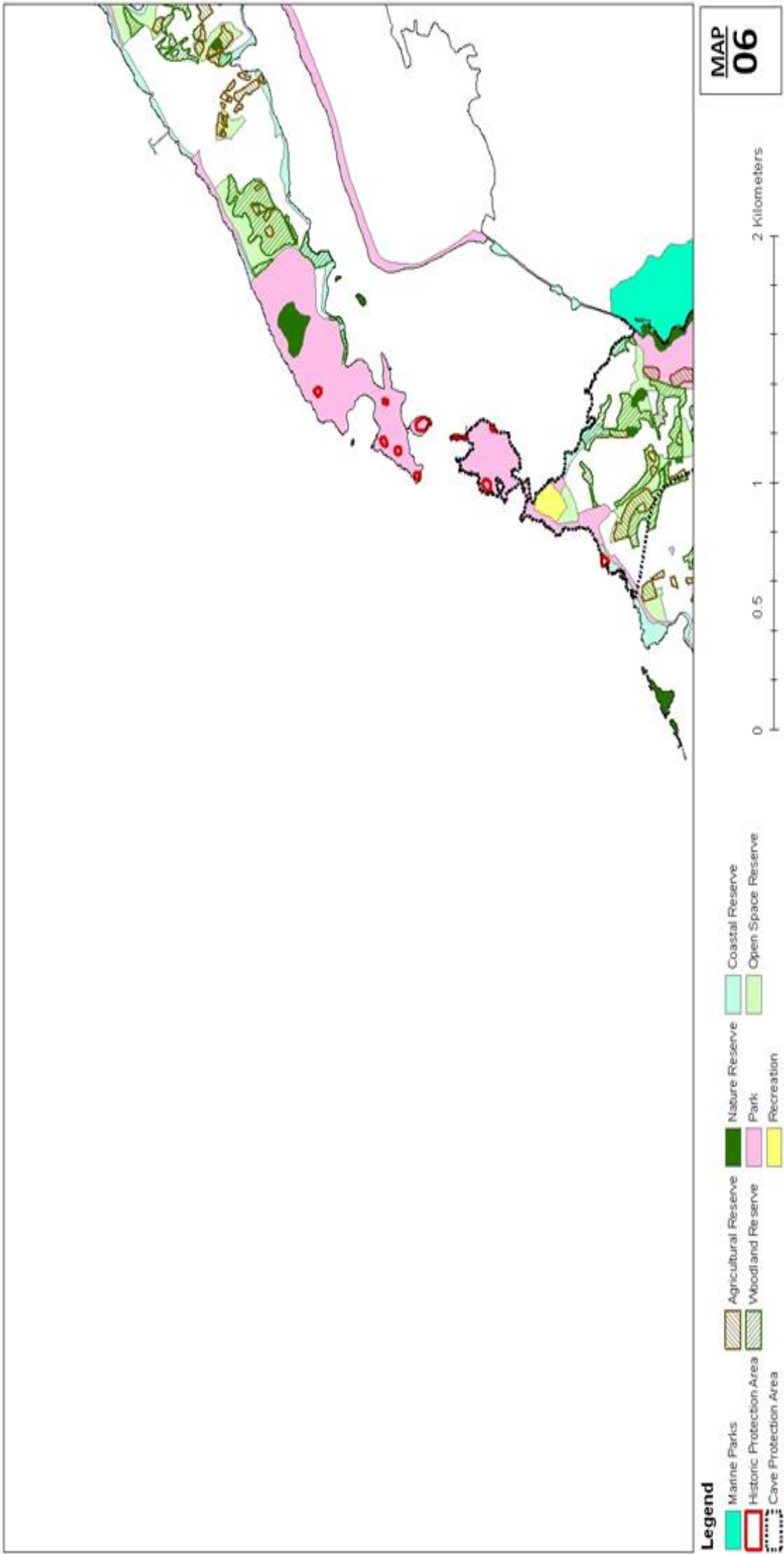
MAP
05

Legend

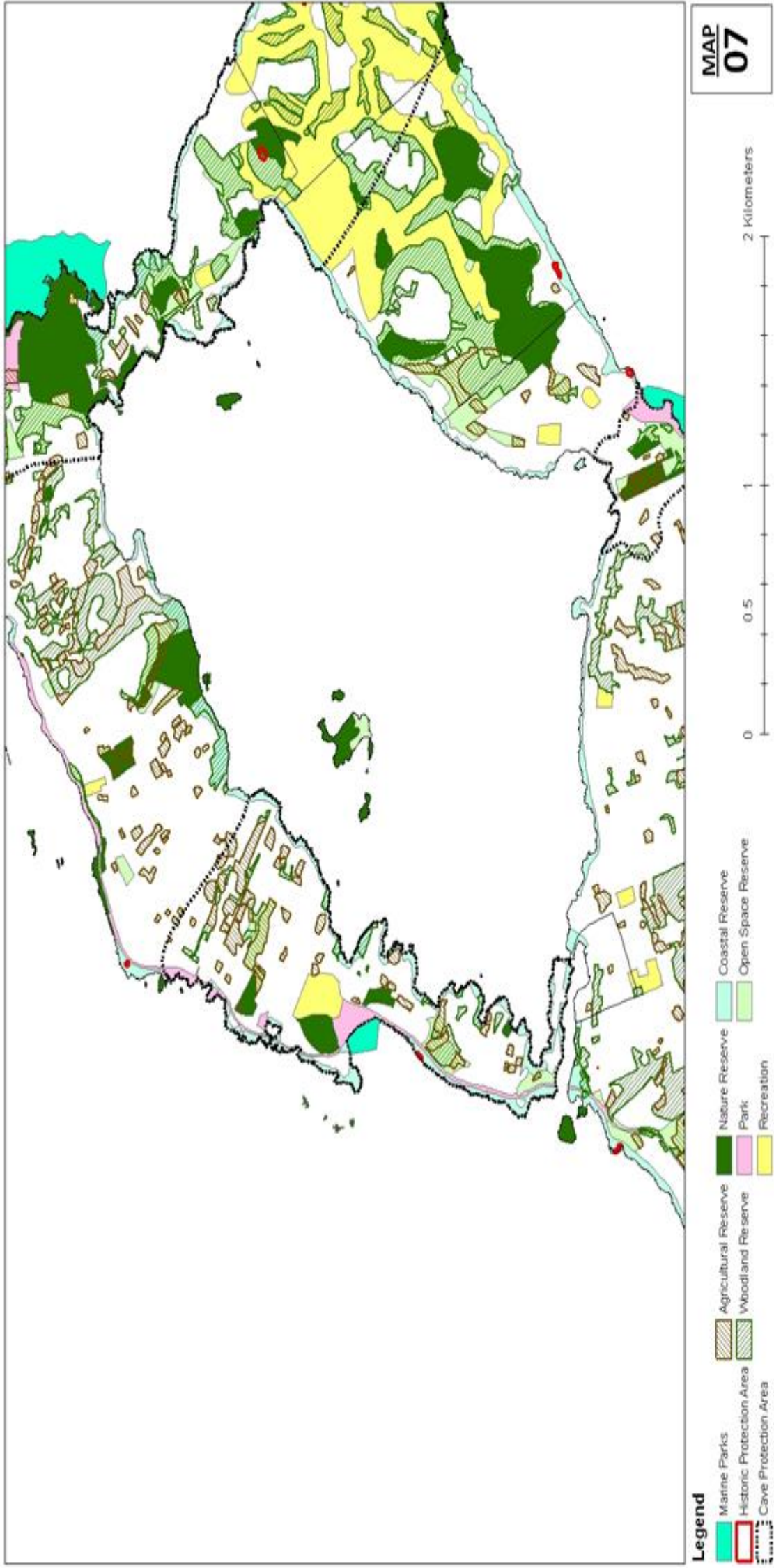
- Marine Parks
- Historic Protection Area
- Cave Protection Area
- Agricultural Reserve
- Woodland Reserve
- Nature Reserve
- Park
- Recreation
- Coastal Reserve
- Open Space Reserve



Source: Department of Planning



Source: Department of Planning



Source: Department of Planning

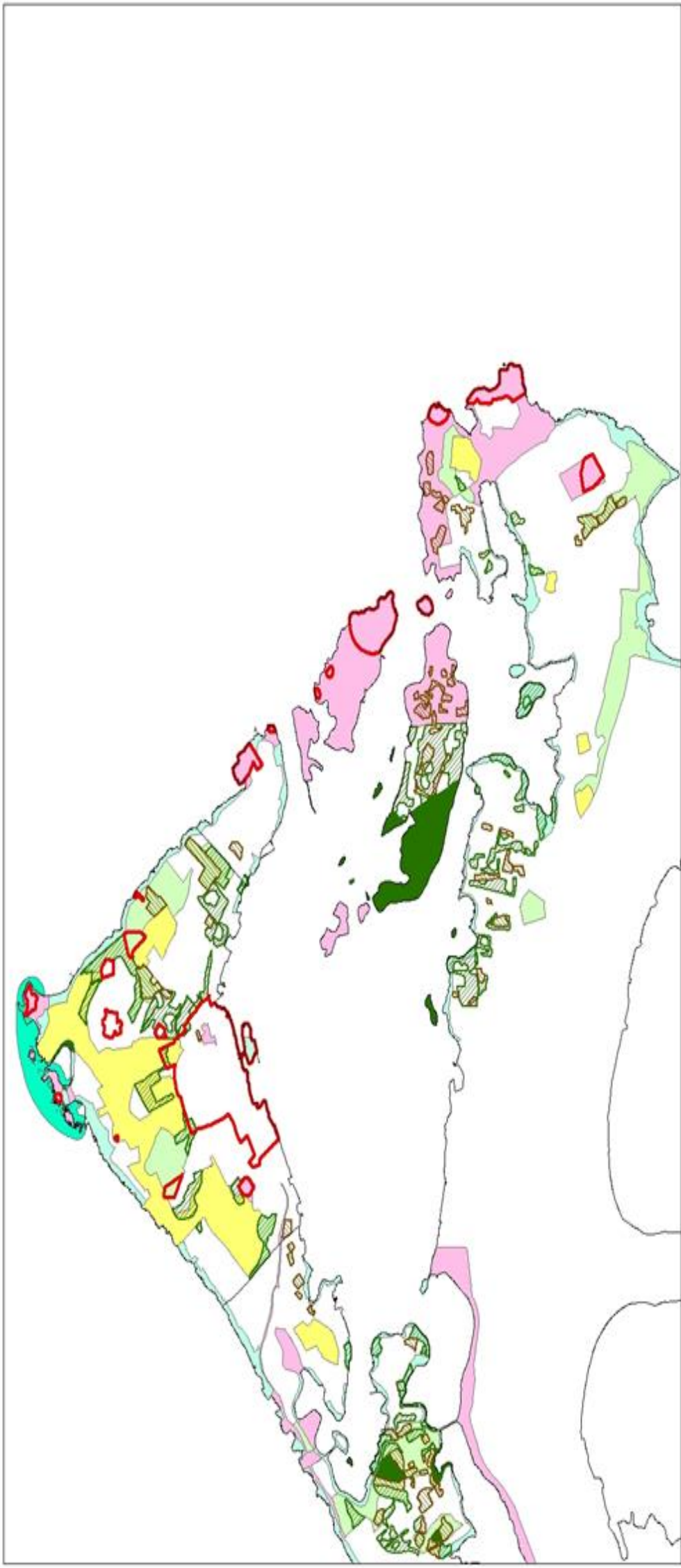


MAP 08



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

Source: Department of Planning



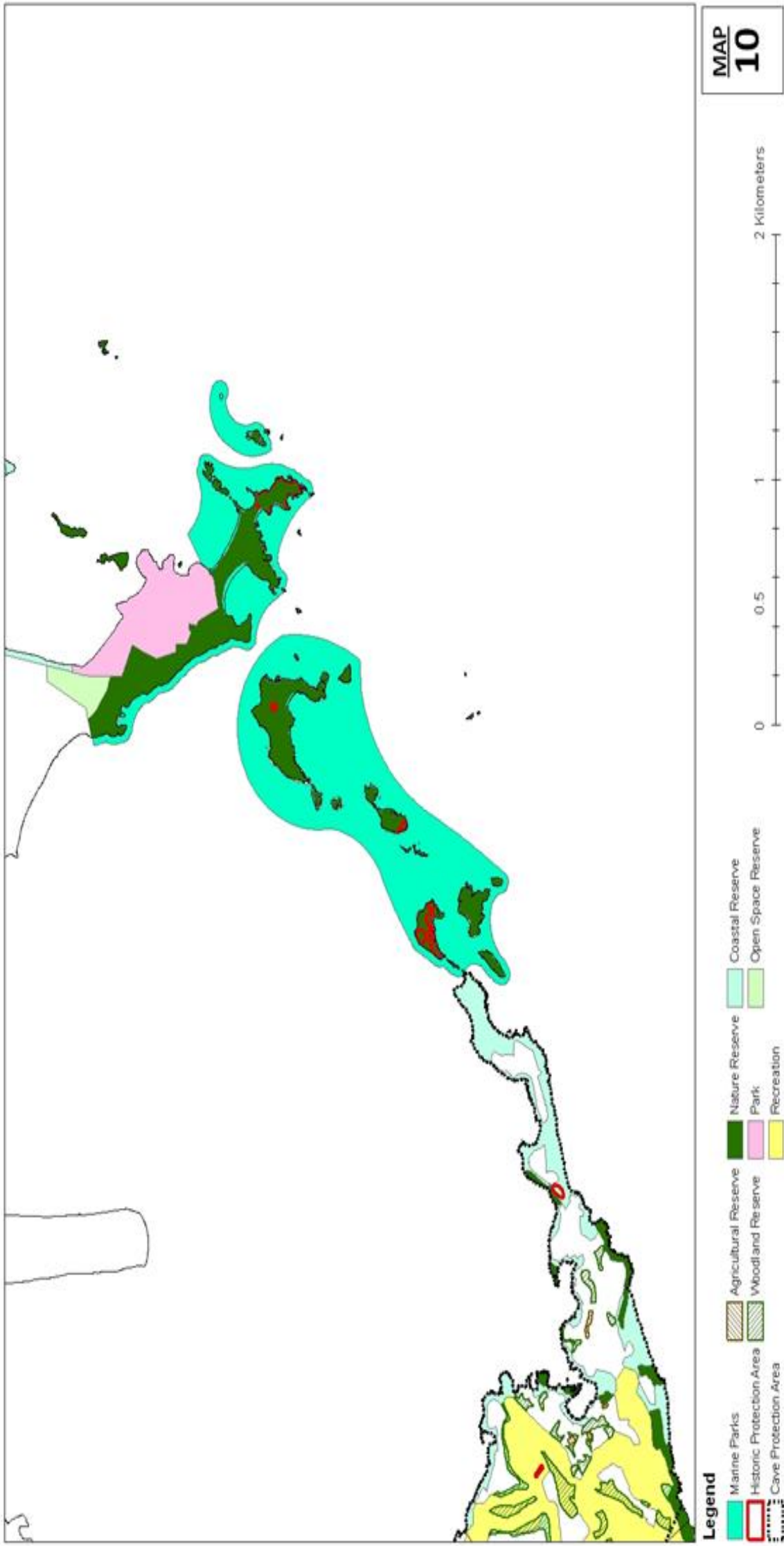
Legend

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



MAP 09

Source: Department of Planning



Legend

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



MAP 10

Source: Department of Planning



GOVERNMENT OF BERMUDA

Department of Statistics

