Statistics Report 2016

Department of the Environment,
Heritage and Climate Change
HM Government of Gibraltar

Contents

1. Air Quality

Introduction

From world leaders on a global level, to neighbours in our local community, air pollution has become one of our time's greatest concerns coming first in the environmental agenda. Intricately connected to human health, welfare, and the natural environment, air pollution plays a significant role in our quality of life most especially as the driving force behind global warming.

To monitor air pollution and determine the quality of the air we breathe, advanced technology is used to measure the concentration of pollutants in the air. In Gibraltar, this is done through a formalised programme that consists of three automatic monitoring stations measuring a variety of pollutants; and a passive monitoring network measuring nitrogen dioxide and volatile organic compounds with diffusive samplers.

Operated with the objective of monitoring legislative compliance and developing future guidance on how to reduce impacts on humans and the natural environment, results logged at all stations are continuously examined and made public near real-time at www.gibraltarairquality.gi.

Month	Number of Visits	Unique Visitors	Page Views
Jan-16	286	142	907
Feb-16	288	148	842
Mar-16	330	128	960
Apr-16	435	143	1,367
May-16	428	187	1,133
Jun-16	436	175	1,082
Jul-16	399	105	764
Aug-16	384	110	803
Sep-16	380	133	834
Oct-16	411	137	874
Nov-16	278	127	654
Dec-16	235	108	663

Gibraltar Air Quality Hits for 2016

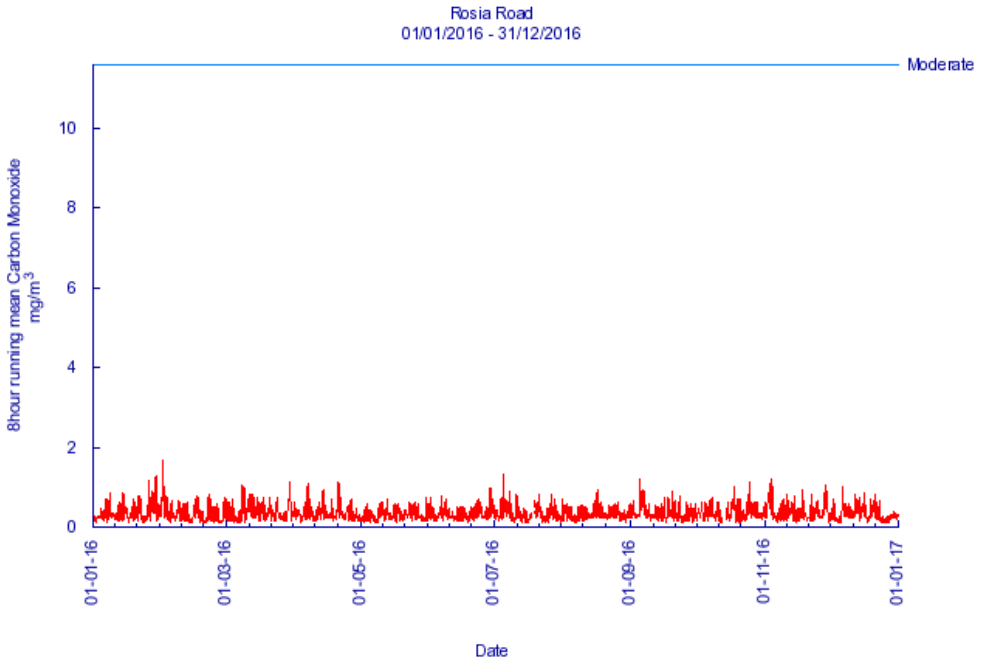
The table above provides an indication of the level of activity recorded on Gibraltar's air quality website throughout 2016.

Rosia Road: 1st January to 31st December 2016

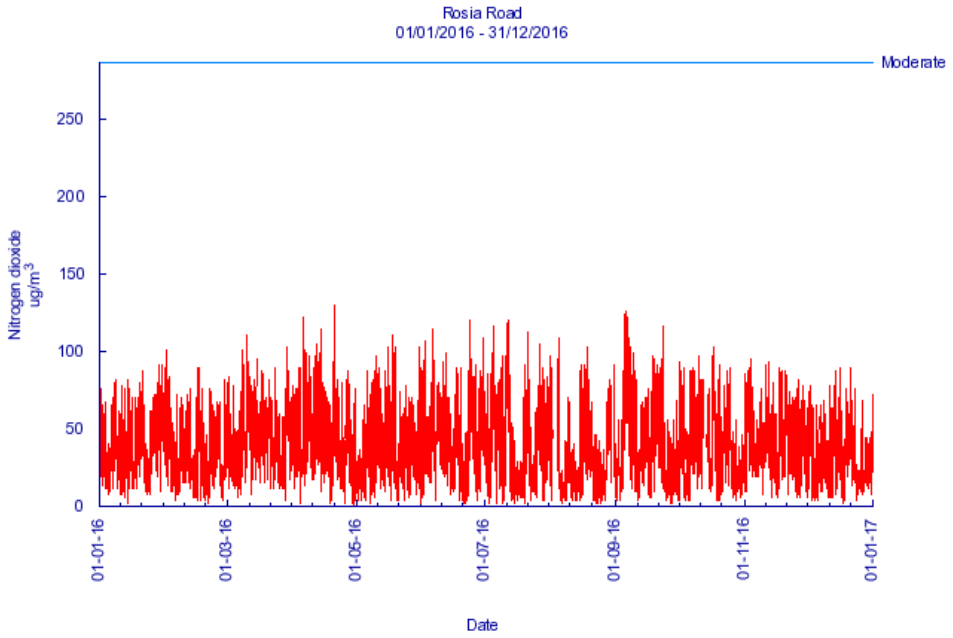
The following series of data highlights recordings taken at the Rosia Road automatic monitoring station throughout 2016. At this site readings of benzene, carbon monoxide (CO), nitrogen dioxide (NO_2), and sulphur dioxide (SO_2) are taken.

POLLUTANT	BENZ	CO	NO_2	SO_2
Maximum hourly mean	14.8 µg m^{-3}	3 µg m^{-3}	130 µg m^{-3}	138 µg m^{-3}
Maximum running 8-hour mean	7.8 µg m^{-3}	1.7 µg m^{-3}	111 µg m^{-3}	50 µg m^{-3}
Maximum running 24-hour mean	3.7 µg m^{-3}	0.9 µg m^{-3}	94 µg m^{-3}	32 µg m^{-3}
Maximum daily mean	3.5 µg m^{-3}	0.9 µg m^{-3}	92 µg m^{-3}	29 µg m^{-3}
Average	0.5 µg m^{-3}	0.4 µg m^{-3}	39 µg m^{-3}	5 µg m^{-3}
Data capture	90.5 %	99 %	98 %	98 %

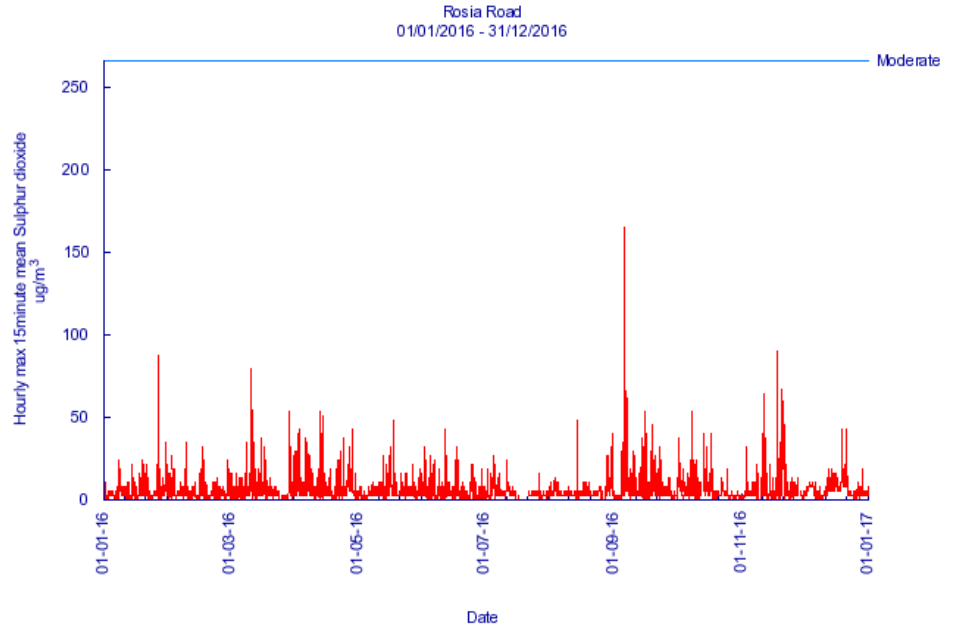
Rosia Road monitored results 2016



CO 8 hour running mean for 1st January to 31st December 2016



NO2 hourly mean for 1st January to 31st December 2016



SO2 hourly max 15 minute mean for 1st January to 31st December 2015

Pollutant	Public Health (Air Quality Limit Values) Rules 2002, (Amendment) Rules 2003 and (Ozone) Rules 2004	Exceedances
Carbon Monoxide	Running 8-hour mean > 10.0 mg m^{-3}	0
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	0
Sulphur Dioxide	Annual mean > 20 µg m^{-3}	0

Rosia Road pollutant exceedances for 2016

Analysing gathered data against those recorded in 2015, it becomes clear that air quality at Rosia Road continues to improve year upon year.

In 2016, a marked reduction of benzene, carbon monoxide and nitrogen dioxide was recorded. As the maximum hourly mean, benzene achieved a total reduction of 11.4 µg m^{-3}, carbon monoxide a reduction of 0.5 µg m^{-3}, and nitrogen dioxide 36 µg m^{-3}. As an annual average, all three pollutants also secured reductions.

In contrast, readings for sulphur dioxide during 2016 experienced an increase. Up by 34 µg m^{-3}, the maximum hourly mean for sulphur dioxide rose from 104 µg m^{-3} in 2015, to 138 µg m^{-3} in 2016. Across the board, further increases were also noted, however, the annual average continued to remain the same at 5 µg m^{-3}.

Overall, there have been no threshold exceedances recorded at the site.

The table below highlights the engine operating hours of South District power stations for 2016.

Engine Hours	
	Total 2016
GMES EX MOD Power Station	93
GMES South Temp. Gen.	6919
Portman Temp. Gen.	4345

*OESCO Power Station was decommissioned in 2015

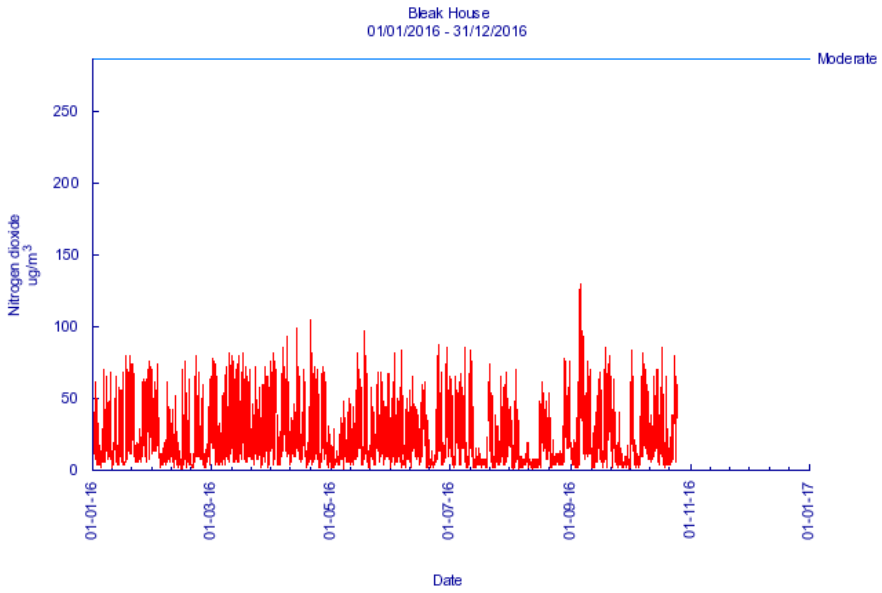
South District Power Stations engine hours in 2016

Bleak House: 1st January to 31st December 2016

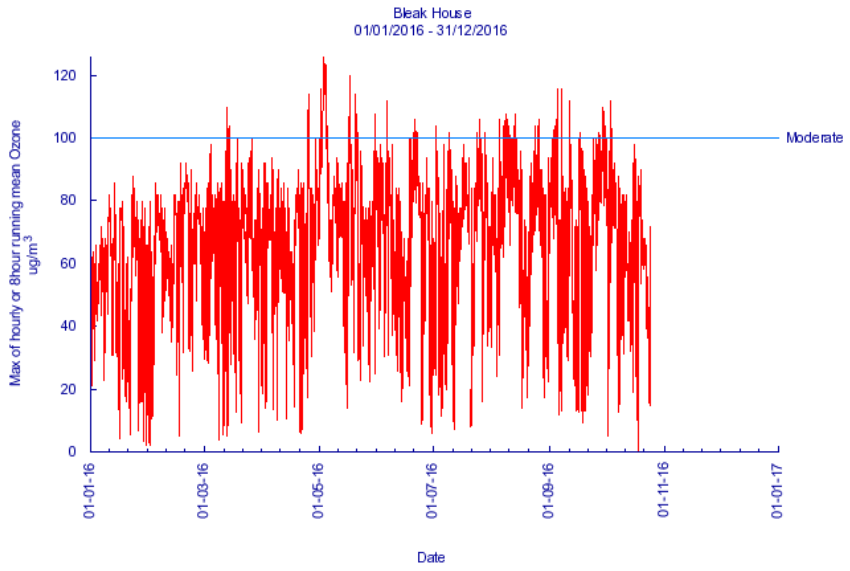
Below, air pollutant data for the suburban setting of Bleak House in Gibraltar is shown. At this site, nitrogen dioxide and ozone (O_3) are monitored.

POLLUTANT	NO_2	O_3
Maximum hourly mean	130 µg m^{-3}	126 µg m^{-3}
Maximum running 8-hour mean	108 µg m^{-3}	124 µg m^{-3}
Maximum running 24-hour mean	78 µg m^{-3}	119 µg m^{-3}
Maximum daily mean	70 µg m^{-3}	119 µg m^{-3}
Average	23 µg m^{-3}	59 µg m^{-3}
Data capture	81 %	81 %

Bleak House monitored results 2016



NO2 hourly mean data for 1st January to 31st December 2016



Ozone maximum of hourly or 8 hour running mean for 1st January to 31st December 2016

Pollutant	Public Health (Air Quality Limit Values) Rules 2002, (Amendment) Rules 2003 and (Ozone) Rules 2004	Exceedances
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	0
Ozone	Running 8-hour mean > 120 µg m^{-3}	3

Bleak House pollutant exceedances for 2016

In 2016, monitored results for nitrogen dioxide were inconsistent showing signs of both improvement and deterioration. The maximum running 8-hour mean in particular highlighted the most notable increase in pollutant concentration from 94 µg m^{-3} in 2015 to 108 µg m^{-3}. Maximum running 24-hour mean and maximum daily mean also experienced increases to this effect, however the maximum hourly mean remained the same. In spite of these results, the annual mean saw a reduction from 24 µg m^{-3} to 23 µg m^{-3}.

With ozone, mixed results in pollutant concentrations were also noted. For maximum hourly mean and maximum running 8-hour mean, a significant decrease of 24 µg m^{-3} and 17 µg m^{-3} respectively were achieved. Maximum running 24-hour mean and maximum daily mean, however, recorded higher concentrations. Overall, the annual mean for ozone saw an improvement by 1 µg m^{-3}, and threshold exceedances reduced from 5 in the previous year to 3.

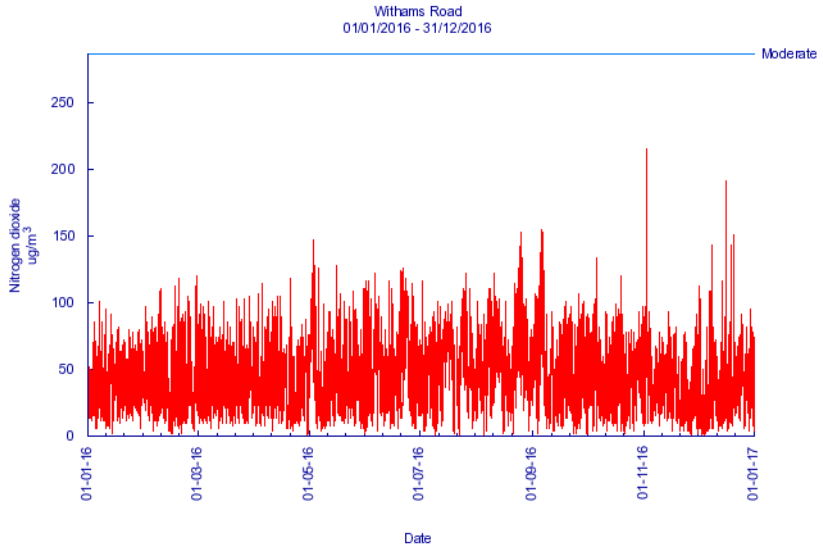
Ozone is formed by the sunlight-initiated oxidation of volatile organic compounds (VOCs) in the presence of nitrogen oxides (NO_x). Not produced locally, this pollutant is created from ozone precursors that are predominantly of a transboundary nature. As a result, this issue is currently being tackled through international agreements on a global scale.

Witham's Road: 1st January to 31st December 2016

As the final automatic monitoring station, Witham's Road is located in the South District and within range of the South District power stations. Positioned here intentionally to observe the effects of traffic and power station emissions on pollutant levels, nitrogen dioxide is recorded at this site and has been regulated since 2008.

POLLUTANT	NO_2
Maximum hourly mean	216 µg m^{-3}
Maximum running 8-hour mean	135 µg m^{-3}
Maximum running 24-hour mean	110 µg m^{-3}
Maximum daily mean	109 µg m^{-3}
Average	45 µg m^{-3}
Data capture	99 %

Witham's Road monitored results 2016



NO2 hourly mean data for 1st January to 31st December 2016

Pollutant	Public Health (Air Quality Limit Values) Rules 2002, (Amendment) Rules 2003 and (Ozone) Rules 2004	Exceedances
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	1

Witham's Road pollutant exceedances for 2016

At Witham's Road, annual mean concentrations of nitrogen dioxide saw an improvement from 2015 by a total of 4 µg m^{-3}. Maximum hourly mean and maximum running 8-hour mean, however, did not support this trend with concentrations rising significantly by 46 µg m^{-3} and 9 µg m^{-3} respectively. In addition to this, one exceedance of the pollution threshold was recorded.

Overview of Gibraltar's automatic air pollution measurement

To ensure the accuracy and reliability of all results documented by Gibraltar's air quality monitoring programme, substantial data capture is necessary. As such, an average of 90% data capture for all monitored parameters took place in 2016 in line with the UK network mean as shown below.

2016 Sites	CO	NO2	O3	PM10	PM25	SO2	Total
Number of Sites	7	145	80	75	81	27	165
Number of sites < 85 %	1	23	6	24	18	7	33
Number of sites < 90%	2	30	10	32	26	7	52
Network Mean (%) (UK)	91.8	92.1	94.2	86	87.3	88.8	90.5
Gibraltar Network Mean (%)	99	92.7	81	88.5	85	98	90.7

Data capture for 2016 (%)

Compliance with Air Quality Limit Values

To ensure compliance with air quality objectives and legislative limit values, it is necessary to cross-examine gathered data with these policies. Within this section, pollutants from the automatic monitoring framework (carbon monoxide, nitrogen dioxide, sulphur dioxide, benzene and ozone) will be evaluated, with failures to meet standards highlighted in red and compliant values highlighted in green.

Air quality objective for CO (as maximum daily running 8hr mean)	Recorded levels (as maximum daily running 8hr mean)
10 mg m^{-3}	**0.9 mg m-3**

Automatic measurement of Carbon Monoxide in 2016

Air Quality Objective for NO_2	Recorded Annual Mean
40 µg m^{-3}	**39 µg m-3 (Rosia Road)** **45 µg m-3 (Witham's Road)** **23 µg m-3 (Bleak House)**

Recorded annual means for Nitrogen Dioxide in 2016

Air Quality Objective for NO_2 (1 hour mean)	Recorded 1 hour mean
200 µg m^{-3} not to be exceeded more than 18 times per year	**130 µg m^{-3} (Rosia Road)** **216 µg m^{-3} (Witham's Road)** **Target Value exceeded on 1 day** **130 µg m^{-3} (Bleak House)**

Recorded one hour mean for Nitrogen Dioxide in 2016

Air Quality Objective for SO_2 (Daily Mean)	Recorded Daily Mean
125 µg m^{-3} not to be exceeded more than 3 times per year	**29 µg m^{-3}**
350 µg m^{-3} not to be exceeded more than 24 times per year	**138 µg m^{-3}**

Recorded daily mean for Sulphur Dioxide in 2016

Air Quality Objective for Benzene (Annual Mean)	Recorded Annual Mean
5 µg m^{-3}	**0.5 µg m^{-3}**

Recorded annual mean for Benzene in 2015

Air Quality Objective for Ozone (Maximum Daily 8 Hour Mean)	Maximum rolling 8-hr mean (µg m-3)
120 µg m^{-3} not to be exceeded more than 25 days per calendar year, averaged over 3 years.	**124 µg m^{-3}** **Target value exceeded on 3 days**

Maximum rolling 8-hr mean for Ozone in 2016

Evaluating the results above, all pollutants tracked under the automatic monitoring framework were successful in adhering to legislative thresholds except nitrogen dioxide at one site (Witham's Road). According to the data, nitrogen dioxide levels at Witham's Road did not meet the 40 µg m^{-3} requirement reaching a total of 45 µg m^{-3}. This, however, is an improvement from 2015 which surpassed the limit at 49 µg m^{-3}. The overall trend in air quality is therefore one of improvement across the board

Review of Gibraltar's non-automatic air pollution measurements

As part of Gibraltar's non-automatic monitoring programme, concentrations of particulates and heavy metals such as arsenic (As), cadmium (Cd), nickel (Ni), and lead (Pb) are measured. Assessed against limit values and objectives, the following series of data highlights compliant figures in green and non-compliant in red.

Lead

Air Quality Objective for Lead (measured as an annual mean)	Recorded Annual Mean
0.5 µg m^{-3}	**0.005 µg m^{-3}**

Recorded annual mean for Lead in 2016

Particulate Matter (PM_{10})

Air Quality Objective for PM_{10} (measured as an annual mean)	Recorded Annual Mean
40 µg m^{-3}	**24 µg m^{-3}**
Air Quality Objective for PM_{10} (measured as a daily mean)	**No. of exceedances of maximum daily mean**
50 µg m^{-3} not to be exceeded more than 35 times in a year	**7**

Bleak House PM_{10} recorded annual mean and compliance 2016

	2009	2010	2011	2012	2013	2014	2015	2016
% Data Capture	98	95	85	90	73	82	94	93
Annual Mean PM_{10} (40 µg m^{-3})*	38.2	40.6	34	34	36	36	31	28
Max. 24-hour mean PM_{10}	79	130	65	83	88	155	41	41
Days > 50 µg m^{-3} (35 day limit)*	37	64	25	18	15	17	16	11

Breakdown of PM_{10} statistics for Rosia Road

Particulate Matter ($PM_{2.5}$)

Air Quality Objective for $PM_{2.5}$ (measured as an annual mean)	Recorded Annual Mean
20µg m^{-3}	**13 µg m^{-3}**

$PM_{2.5}$ recorded annual mean for 2016

Arsenic, Cadmium, Nickel & Poly Aromatic Hydrocarbons (measured as Benzo(a)pyrene)

Pollutant	Parameter	Target Value	Recorded Average
Arsenic	Annual average	6 ng m^{-3}	**1.3 ng m^{-3}**
Cadmium	Annual average	5 ng m^{-3}	**1.6 ng m^{-3}**
Nickel	Annual average	20 ng m^{-3}	**11 ng m^{-3}**
BAP	Annual average	1 ng m^{-3}	**0.005 ug m^{-3}**

4th Daughter Directive pollutant recordings for 2016

Diffusion Tube Networks

Integral to the non-automatic monitoring programme, a diffusion tube based method is used to assess monthly average concentrations of nitrogen dioxide and benzene at a number of sites across Gibraltar.

Summary of Hydrocarbon Results

In the table that follows, average hydrocarbon concentrations for benzene are shown. With a pollutant threshold of 5 µg m^{-3}, the table highlights where compliance has been achieved, and also provides a comparison to the previous year's results to determine whether there are improvements being made.

Site ID	Site Name	2015 Benzene (µg m-3)	2016 Benzene (µg m-3)	Difference
gib1	Rosia Road	0.9	0.9	0
gib15	Catalan Bay Road	0.4	0.4	0
gib16	Laguna Estate	0.5	0.5	0
gib17	Kings Lines Fuel Depot	0.6	0.7	0.1
gib18	Moorish Castle Estate	0.6	0.5	-0.1
gib19	North Mole	0.7	0.7	0
gib2	Bleak House	0.3	0.5	0.2
gib20	Sundial Roundabout	1	1.1	0.1
gib21	Anchorage Rosia Road	0.6	1.1	0.5
gib3	Jumpers	0.7	0.9	0.2
gib30	Governors Meadow House	0.5	0.6	0.1
gib4	Devils Tower Road	0.4	0.6	0.2
gib5	Glacis Road	0.9	0.6	-0.3
gib6	Queensway	0.9	1	0.1
gib7	Harbour Views	0.5	0.6	0.1

Average hydrocarbon concentrations for benzene 2016

Examining the results, it is clear to see that compliance was achieved at all sites. Some locations, however, did experience a slight increase in concentrations.

Nitrogen Dioxide Network

The following table shows diffusion tube readings of nitrogen dioxide at a variety of locations throughout Gibraltar. Keeping in mind threshold limits of 40 µg m^{-3}, the following trends were recorded.

Site ID	Site Name	2015 NO2 (µg m-3)	2016 NO2 (µg m-3)	Difference
gib1	Rosia Road	46	39	-7
gib10	South Barracks Road	56	47	-9
gib11	Main Street	40	34	-6
gib12	Water Gardens	51	44	-7
gib13	George Don House	43	36	-7
gib14	Prince Edwards Road	46	38	-8
gib2	Bleak House	23	22	-1
gib20	Sundial Roundabout	53	45	-8
gib21	Anchorage Rosia Road	51	43	-8
gib22	Rosia Promenade	49	40	-9
gib23	Lathbury Industrial Park	21	21	0
gib24	Upper Withams Entrance	54	45	-9
gib25	Churchill House	51	46	-5
gib26	Alameda Gardens Theatre	38	33	-5
gib27	Alameda Gardens Access Road	38	32	-6
gib28	Rock Hotel	52	44	-8
gib29	Gardiners Road	39	33	-6
gib3	Jumpers	59	50	-9
gib30	Governors Meadow House	49	41	-8
gib31	Dockyard Road	53	44	-9
gib32	Woodford Cottage	51	44	-7
gib4	Devils Tower Road	39	39	0
gib5	Glacis Road	57	52	-5
gib6	Queensway	54	43	-11
gib7	Harbour Views	45	37	-8
gib8	Red Sands Road	50	41	-9
gib9	Lime Kiln Road	45	38	-7

Average nitrogen dioxide concentrations in 2016

Assessing the results above, it is made clear that 14 of the 27 network locations still experienced exceedances in nitrogen dioxide concentrations. Glacis road recorded the highest exceedance at 52 µg m^{-3}. This highlights an area for further attention. Overall, a notable improvement has been experienced throughout all stations and pollutant levels have decreased in comparison to 2015 in all but two cases where they have remained the same.

2. Natural Resources

Bathing Waters

The Bathing Water Directive (2006/7/EC) was adopted on the 15th February 2006 and was transposed into Gibraltar law by the Environment (Quality of Bathing Water) Regulations 2009. In accordance with the requirements of this legislation, regular monitoring is executed and samples taken from Gibraltar's six bathing areas that include Camp Bay, Catalan Bay, Eastern Beach, Little Bay, Sandy Bay and Western Beach.

Site Name	Number of samples taken
Camp Bay	75
Little Bay	76
Catalan Bay	76
Sandy Bay	129
Bathing Pavilion (GASA)	12
Rosia Bay	39
Western Beach	380

As part of new bathing water legislation, there is a requirement to monitor two microbiological indicators of faecal contamination: *E Coli* and intestinal enterococci. Classified into four categories being: "excellent", "good", "sufficient", or "poor", the analyses of these samples taken consider the results over the current bathing season and the preceding three years instead of a single year's result. This allows more reliable assessments to be made as classifications will be less susceptible to bad weather or one-off incidents.

	No. of occasions of low water quality	
	E.Coli >500 cfu/100ml	Intestinal enterococci >185 cfu/100ml
Camp Bay	0	0
Little Bay	0	1
Catalan Bay	0	1
Sandy Bay	1	1
Eastern Beach	2	1
Western Beach	112	96
Bathing Pavilion (Europort Avenue)	0	0

Incidences of low water quality at all beaches in 2016

Reviewing the summary of results, only Western Beach was unable to consistently maintain acceptable bathing quality standards throughout the year. At Western Beach incidences surpassing acceptable bathing water standards occurred on

many occasions with *E.Coli* noting a total of 112 hits, and intestinal enterococci 96. According to the data, *E.Coli* had a highest reading of 72,600 cfu/100ml which is lower than the 2015 value, but significantly above the bathing water standards. With intestinal enterococci, the highest recorded value in 2016 was 21,750 cfu/100ml which exceeds both thresholds and last year's result. Such low water quality is recorded at this site due to discharges from a storm drain maintained by municipal authorities in Spain.

Potable Water Supply

As part of their annual two-tier sampling and analysis programme, the Environmental Agency and AquaGib Ltd investigated the following parameters for local potable water and obtained these results.

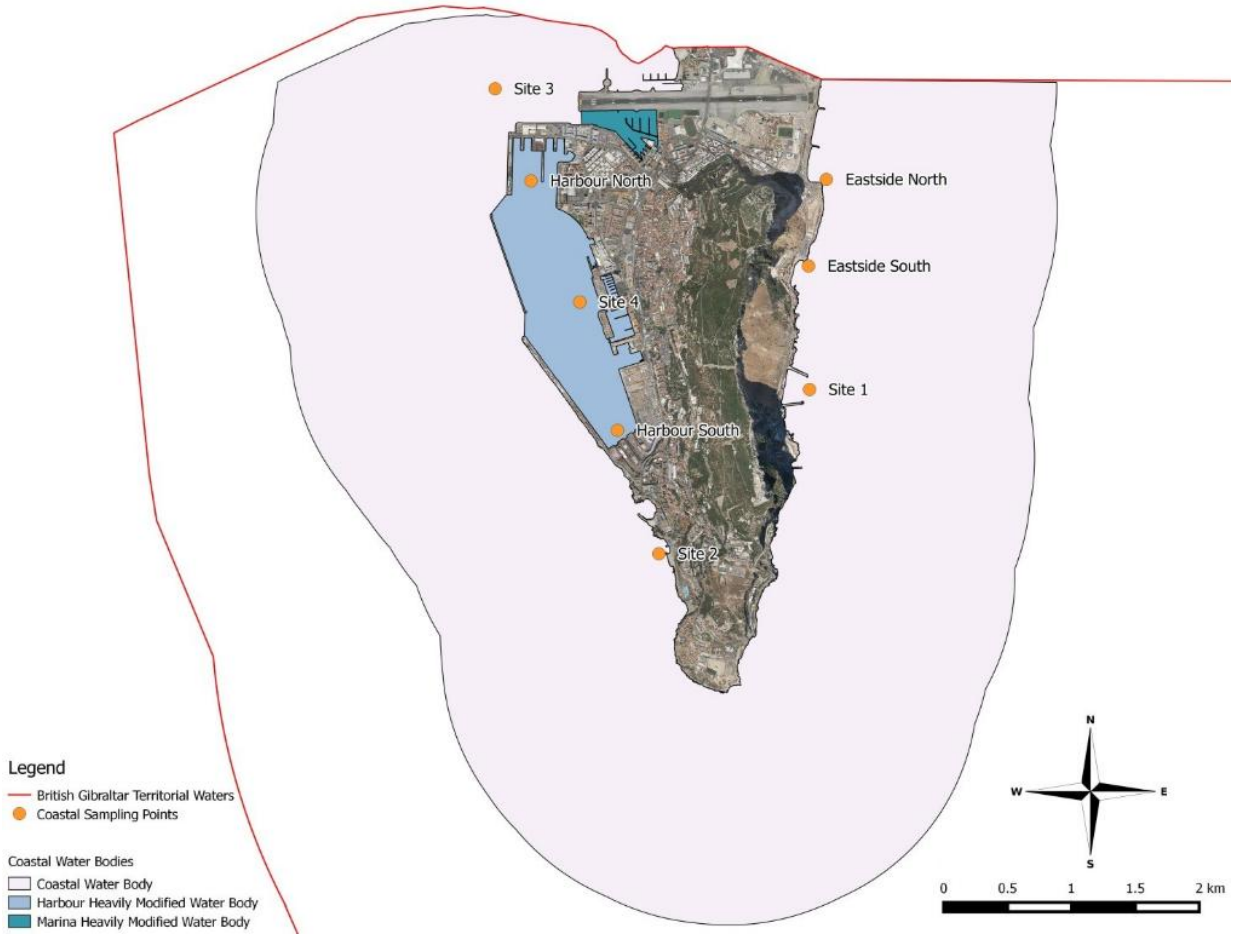
Member State	**United kingdom (Gibraltar)**				
Year	**2016**				
Parameter	**Numbers of WSZ Monitored**	**Numbers of WSZ with Non-Compliance**	**Number of Analyses**	**Number of Analyses not complying**	**% of Analyses Complying**
Microbiological Parameters					
Escherichia (E.coli)	1	0	10	0	100
Enterococci	1	0	10	0	100
Chemical Parameters					
Antimony	1	0	10	0	100
Arsenic	1	0	10	0	100
Benzene	1	0	10	0	100
Benzo(a)pyrene	1	0	10	0	100
Boron	1	0	10	0	100
Bromate	1	1	10	1	90
Cadmium	1	0	10	0	100
Chromium	1	0	10	0	100
Copper	1	0	10	0	100
Cyanide	1	0	10	0	100
1,2-dichloroethane	1	0	10	0	100
Fluoride	1	0	10	0	100
Lead	1	0	10	1	90
Mercury	1	0	10	0	100
Nickel	1	0	10	0	100
Nitrite in distribution at the tap	1	0	10	0	100
Nitrate/nitrite	1	0	10	0	100

formula$_3$					
Pesticides – total	1	0	10	0	100
Polycyclic Aromatic Hydrocarbons	1	0	10	0	100
Selenium	1	0	10	0	100
Tetrachloroethane	1	0	10	0	100
and Trichloroethane	1	0	10	0	100
Trihalomethanes - Total	1	0	10	0	100
Indicator Parameters					
Aluminium	1	0	10	0	100
Ammonium	1	0	10	0	100
Chloride	1	0	10	0	100
Colour	1	0	10	0	100
Conductivity	1	0	10	0	100
pH	1	0	10	0	100
Iron	1	0	10	0	100
Manganese	1	0	10	0	100
Odour	1	0	10	1	90
Oxidisability	1	0	10	0	100
Sulphate	1	0	10	0	100
Sodium	1	0	10	0	100
Taste	1	0	10	0	100
Coliform	1	0	10	0	100
Turbidity	1	0	10	0	100

National summary information on drinking water quality in water supply zones exceeding 1000m³ per day as an average or serving more than 5000 persons

Coastal Water Monitoring

Coastal water sampling is undertaken by H.M. Department of the Environment and Climate Change on a frequent basis at the locations outlined below.



Coastal water sampling points

In line with the Water Framework Directive (WFD) 2000/60/EC, the following chemical and physio-chemical parameters are monitored at different locations and frequencies throughout the year.

Chemical / physio-chemical parameters	Frequency
General	
Temperature	Monthly
Nutrient status - Total N, Total P, NO3, NO2, NH4, PO4	Monthly
Salinity	Monthly
Total suspended solids	Monthly
Dissolved | Oxygen (DO)*	Monthly
Transparency*	Monthly
Chlorophyll-a*	Monthly
pH*	Monthly

Specific pollutants	
Pesticides	
Alachlor	4 times per year
Atrazine	4 times per year
Chlorfenvinphos	4 times per year
Chlorpyrifos	4 times per year
Endosulfan (alpha-endosulfan)	4 times per year
Hexachlorobutadiene	4 times per year
Hexachlorocyclohexane (gamma-isomer, Lindane)	4 times per year
Simazine	4 times per year
Trifluralin	4 times per year
Metals	
Cadmium and its compounds	4 times per year
Lead and its compounds	4 times per year
Mercury and its compounds	4 times per year
Nickel and its compounds	4 times per year
Polyaromatic hydrocarbons	
Anthracene	4 times per year
Fluoranthene	4 times per year
Naphthalene	4 times per year
(Benzo(a)pyrene)	4 times per year
(Benzo(b)fluoranthene)	4 times per year
(Benzo(g,h,i)perylene)	4 times per year
(Benzo(k)fluoranthene)	4 times per year
(Indeno(1,2,3-cd)pyrene)	4 times per year
Chlorinated Hydrocarbons	
1,2-Dichloroethane	4 times per year
Dichloromethane	4 times per year
Hexachlorobenzene	4 times per year
Pentachlorobenzene	4 times per year
Trichlorobenzenes (1,2,4-Trichlorobenzene)	4 times per year
Trichloromethane (Chloroform)	4 times per year
TBT	
Tributyltin compounds (Tributyltin-cation)	4 times per year
Other hydrocarbons	
C10-13-chloroalkanes	4 times per year
Benzene	4 times per year
BDEs	
Brominated diphenylethers	4 times per year
DEHP	
Di(2-ethylhexyl)phthalate	4 times per year
Urons	
Diuron	4 times per year
Isoproturon	4 times per year
Phenols	
Nonylphenols (4-(para)-nonylphenol)	4 times per year
Octylphenols (para-tert-	4 times per year

octylphenol)	
Pentachlorophenol	4 times per year
Other pollutants	
Chromium	4 times per year
Copper	4 times per year
Zinc	4 times per year
Biological parameters	
Phytoplankton - Abundance & composition (Abn. & Comp.)	4 times per year
Benthic macroinvertebrates - Abundance, composition & biomass	Every 6 years

Coastal Monthly and Quarterly Recordings for 2016

The following series of tables illustrates 2016 results for coastal monthly and quarterly samples. Months where data are not available is as a result of poor weather conditions which prevented samples being obtained.

		Site 1. Sandy Bay	Site 2. Camp Bay	Site 3. Airport	Site 4. Mid Harbour
Date of Sampling		**26-JAN-16**	**26-JAN-16**	**26-JAN-16**	**26-JAN-16**
Analyte	***Units***	**11:30**	**11:50**	**12:10**	**13:00**
Nitrogen as N	mg/l	<0.100	<0.100	<0.100	<0.100
Ammoniacal Nitrogen, Filtered as N	mg/l	0.059	<0.0200	<0.0200	<0.0200
Nitrite, Filtered as N	mg/l	<0.00400	<0.00400	<0.00400	<0.00400
Nitrogen : Total Oxidised, Filtered as N	mg/l	<0.100	<0.100	<0.100	<0.100
Orthophosphate, Filtered as P	mg/l	0.02	<0.0100	<0.0100	<0.0100
Phosphorus : Total	mg/l	<0.0200	<0.0200	<0.0200	<0.0200
Chlorophyll, Acetone Extract	ug/l	1.3	0.63	0.7	0.52
Solids, Suspended at 105 C	mg/l	4.6	4.8	5.5	5.5
Nitrate, Filtered as N	mg/l	<0.100	<0.100	<0.100	<0.100

Coastal monitoring (January 2016)

		Site 1. Sandy Bay	Site 2. Camp Bay	Site 3. Runway	Site 4. Mid Harbour
Date of Sampling		**07-JUN-16**	**07-JUN-16**	**07-JUN-16**	**07-JUN-16**
Analyte	***Units***	**12:00**	**12:30**	**13:00**	**13:30**
Chromium Hexavalent	ug/l	<0.3	<0.3	<0.3	<0.3
Cadmium	ug/l	<0.03	<0.03	<0.03	<0.03
Copper	ug/l	<0.2	0.279	0.424	0.492
Lead	ug/l	<0.04	0.071	0.084	0.089
Nickel	ug/l	<0.3	<0.3	0.327	<0.3
Zinc	ug/l	1.7	1.4	2.51	2.32
Mercury	ug/l	<0.01	<0.01	<0.01	<0.01
Chromium	ug/l	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	ug/l	<0.01	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01
Benzo(ghi)perylene	ug/l	<0.01	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01
Fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01
Chloroform :- {Trichloromethane}	ug/l	<0.1	<0.1	<0.1	<0.1

Coastal monitoring (June 2016)

		Site 1 Sandy Bay	Site 2 Camp Bay	Site 3 Airport Runway	Site 4 Mid Harbour
Date of Sampling		**27-JUL-16**	**27-JUL-16**	**27-JUL-16**	**27-JUL-16**
Analyte	***Units***	**11:00**	**11:45**	**13:30**	**14:00**
Nitrogen as N	mg/l	0.116	0.113	0.122	<0.1
Ammoniacal Nitrogen, Filtered as N	mg/l	<0.0200	<0.0200	<0.0200	<0.0200
Nitrite, Filtered as N	mg/l	<0.00400	<0.00400	<0.00400	<0.00400
Nitrogen : Total Oxidised, Filtered as N	mg/l	<0.100	<0.100	<0.100	<0.100
Orthophosphate, Filtered as P	mg/l	<0.0100	<0.0100	<0.0100	<0.0100
Phosphorus : Total	mg/l	<0.0200	<0.0200	<0.0200	<0.0200
Chlorophyll, Acetone Extract	ug/l	<0.500	<0.500	<0.500	<0.500
Solids, Suspended at 105 C	mg/l	3	<3.00	<3.00	4.1
Nitrate, Filtered as N	mg/l	<0.100	<0.100	<0.100	<0.100

Coastal monitoring (July 2016)

		Site 1 Sandy Bay	Site 2 Camp Bay	Site 3 Airport Runway	Site 4 Mid Harbour
Date of Sampling		**18-OCT-16**	**18-OCT-16**	**18-OCT-16**	**18-OCT-16**
Analyte	***Units***	**12:00**	**12:30**	**13:15**	**14:00**
Nitrogen as N	mg/l	0.198	0.143	0.138	0.138
Ammoniacal Nitrogen, Filtered as N	mg/l	<0.0200	<0.0200	<0.0200	<0.0200
Nitrite, Filtered as N	mg/l	<0.00400	<0.00400	<0.00400	<0.00400
Nitrogen : Total Oxidised, Filtered as N	mg/l	<0.100	<0.100	<0.100	<0.100
Orthophosphate, Filtered as P	mg/l	<0.0100	<0.0100	0.01	<0.0100
Phosphorus : Total	mg/l	<0.0200	<0.0200	<0.0200	<0.0200
Chlorophyll, Acetone Extract	ug/l	1.3	0.82	0.94	0.95
Solids, Suspended at 105 C	mg/l	<3.00	4.9	4.4	3.4
Nitrate, Filtered as N	mg/l	<0.100	<0.100	<0.100	<0.100

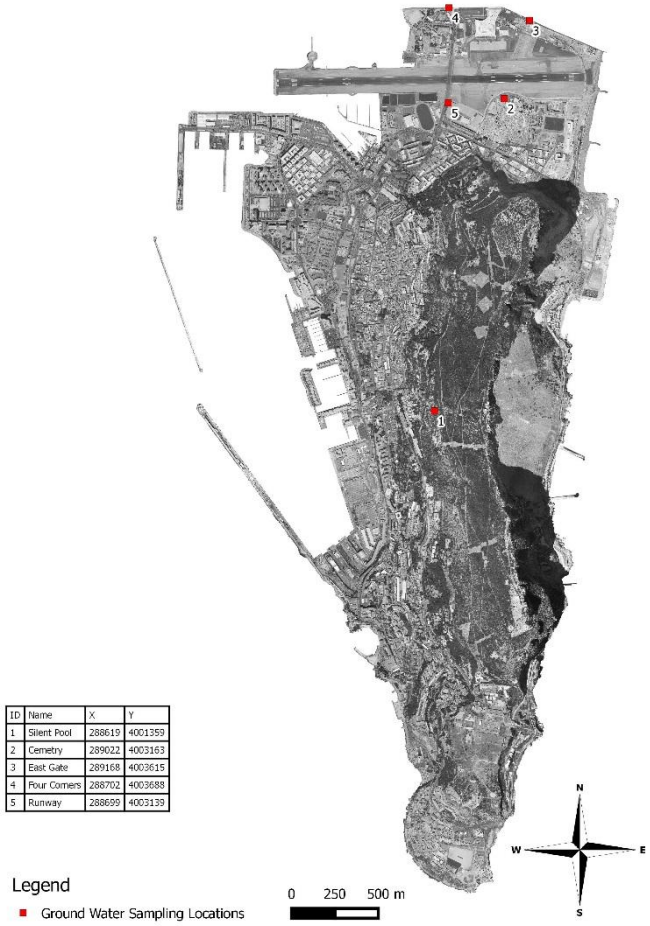
Coastal monitoring (October 2016)

		Site 1 Sandy bay	Site 2 Camp bay	Site 3 Runway Westside	Site 4 Mid Harbour
Date of Sampling		**13-DEC-16**	**13-DEC-16**	**13-DEC-16**	**13-DEC-16**
Analyte	***Units***	**12:00**	**12:30**	**13:00**	**13:30**
Chromium Hexavalent	ug/l	<0.3	<0.3	<0.3	<0.3
Chromium Hexavalent	ug/l	<0.3	<0.3	<0.3	<0.3
Cadmium	ug/l	<0.03	<0.03	<0.03	<0.03
Copper	ug/l	<0.2	0.218	0.271	0.857
Lead	ug/l	0.041	0.05	0.079	0.186
Nickel	ug/l	0.437	0.304	0.33	0.377
Zinc	ug/l	3.45	2.19	0.996	1.87
Mercury	ug/l	<0.01	<0.01	<0.01	<0.01
Chromium	ug/l	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	ug/l	<0.01	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01
Benzo(ghi)perylene	ug/l	<0.01	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01
Fluoranthene	ug/l	<0.01	<0.01	<0.01	<0.01
Chloroform :- {Trichloromethane}	ug/l	<0.1	<0.1	<0.1	<0.1

Coastal monitoring (December 2016)

Groundwater Monitoring

On a monthly basis, groundwater monitoring is carried out at two local aquifers: one located in the Northern Isthmus and one in the Southern bedrock. As part of the monitoring programme, samples are taken from five specific locations highlighted below.



Groundwater sampling points

Results for 2016, which are compliant with EU thresholds, are presented in the following tables.

		Site 1. Silent Pool	Site 2. Cemetery	Site 3. Frontier	Site 4. Four Corners	Site 5. Runway
Date of Sampling		**29-FEB-16**	**29-FEB-16**	**29-FEB-16**	**29-FEB-16**	**29-FEB-16**
Analyte	***Units***	**11:00**	**11:40**	**12:05**	**12:20**	**12:55**
Alkalinity to pH 4.5 as CaCO3	mg/l	175	195	208	263	315
Ammoniacal Nitrogen as N	mg/l	0.03	0.03	0.03	0.03	0.03
Chloride	mg	2040	46.3	190	64.2	1360

	/l					
Nitrite as N	mg /l	<0.00400	0.0064	<0.00400	<0.00400	<0.00400
Nitrogen : Total Oxidised as N	mg /l	3.34	7.06	4.44	12.3	6.31
Carbon, Organic : Total as C :- {TOC}	mg /l	<1.00	2.3	2.3	2.9	1.3
Solids, Suspended at 105 C	mg /l	-	<3	<3	<3	<3
Arsenic	ug /l	<1	4.59	2.66	12.7	10.1
Cadmium	ug /l	<0.1	<0.1	0.602	<0.1	<0.1
Lead	ug /l	<2	<2	<2	<2	<2
Zinc	ug /l	6.54	<5	189	5.88	17.8
Calcium	mg /l	131	76.2	72.7	90.2	147
Magnesium	mg /l	135	10.1	23.3	23.8	91.7
Potassium	mg /l	36.2	8.02	9.49	15.7	36.6
Sodium	mg /l	1090	26.7	119	58.3	816
Sulphate as SO4	mg /l	280	25.1	63.8	71.9	195
Mercury	ug /l	-	<0.01	<0.01	<0.01	<0.01
Bicarbonate as HCO3	mg /l	-	238	254	321	384
Nitrate as N	mg /l	-	7.05	<4.44	<12.3	<6.31

Groundwater monitoring (February 2016)

		Site 1 Silent Pool	Site 3 Frontier	Site 4 Four Corners
Date of Sampling		**28-JUN-16**	**28-JUN-16**	**28-JUN-16**
Analyte	***Units***	**13:05**	**12:08**	**12:30**
Alkalinity to pH 4.5 as CaCO3	mg/l	162	218	277
Ammoniacal Nitrogen as N	mg/l	<0.0300	<0.0300	<0.0300
Chloride	mg/l	2110	278	55.5
Nitrite as N	mg/l	<0.00400	<0.00400	<0.00400
Nitrogen : Total	mg/l	4.01	9.25	6.52

Oxidised as N				
Carbon, Organic : Total as C :- {TOC}	mg/l	<1.00	1.8	2.3
Solids, Suspended at 105 C	mg/l	-	3.15	<3
Arsenic	ug/l	<1	2.41	12.1
Cadmium	ug/l	<0.1	0.756	<0.1
Lead	ug/l	<2	<2	<2
Zinc	ug/l	7.02	258	5.79
Calcium	mg/l	140	87.9	87.4
Magnesium	mg/l	152	28.6	23.3
Potassium	mg/l	42.6	11.7	13.1
Sodium	mg/l	1150	158	49.6
Sulphate as SO4	mg/l	313	69.9	66.7
Mercury	ug/l	-	<0.01	<0.01
Bicarbonate as HCO3	mg/l	-	266	338
Nitrate as N	mg/l	-	<9.25	<6.52

Groundwater monitoring (June 2016)

		Site 1 Silent Pool	**Site 2 Cemetery**	**Site 3 Frontier**	**Site 4 Four Corners**	**Site 5 Runway**
		14-SEP-16	**14-SEP-16**	**14-SEP-16**	**14-SEP-16**	**14-SEP-16**
Analyte	***Units***	**14:20**	**11:05**	**11:35**	**12:10**	**12:30**
Alkalinity to pH 4.5 as CaCO3	mg/l	170	205	215	281	256
Ammoniacal Nitrogen as N	mg/l	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Chloride	mg/l	2360	44.9	354	58.1	1140
Nitrite as N	mg/l	<0.00400	0.0168	<0.00400	<0.00400	<0.00400
Nitrogen : Total Oxidised as N	mg/l	4.38	4.74	5.79	4.95	2.53
Carbon, Organic : Total as C :- {TOC}	mg/l	0.8	0.8	1.2	2	1.2
Arsenic	ug/l	<1	3.89	2.2	16.3	9.48
Cadmium	ug/l	<0.1	<0.1	0.874	<0.1	<0.1
Lead	ug/l	<2	<2	<2	<2	<2
Zinc	ug/l	11	6.98	264	9.67	14.8
Calcium	mg/l	153	82.3	89.2	94.6	102
Magnesium	mg/l	171	10.6	38.5	26.9	94.9

Potassium	mg/l	46.4	8.91	13.4	12.9	37.2
Sodium	mg/l	1270	28.7	214	54.9	666
Sulphate as SO4	mg/l	334	28.2	88	73.3	204
Mercury	ug/l	-	0.038	<0.01	<0.01	<0.01
Bicarbonate as HCO3	mg/l	-	250	262	343	312
Nitrate as N	mg/l	-	4.72	<5.79	<4.95	<2.53

Groundwater monitoring (September 2016)

		Site 1 Silent Pool	Site 2 Cemetery	Site 4 Four Corners
Date of Sampling		**24-NOV-16**	**24-NOV-16**	**24-NOV-16**
Analyte	***Units***	**13:30**	**11:00**	**13:00**
Alkalinity to pH 4.5 as CaCO3	mg/l	164	195	273
Ammoniacal Nitrogen as N	mg/l	<0.300	<0.0300	<0.0300
Chloride	mg/l	2330	48.9	1080
Nitrite as N	mg/l	<0.00400	0.0065	<0.00400
Nitrogen : Total Oxidised as N	mg/l	4.8	4.23	4.38
Carbon, Organic : Total as C :- {TOC}	mg/l	1.4	0.8	1.2
Solids, Suspended at 105 C	mg/l	-	<3	5.6
Arsenic	ug/l	<1	3.99	8.42
Cadmium	ug/l	<0.1	<0.1	<0.1
Lead	ug/l	<2	<2	<2
Zinc	ug/l	9.41	9.97	12.6
Calcium	mg/l	153	76.4	110
Magnesium	mg/l	161	10.1	82.2
Potassium	mg/l	43	7.81	32.6
Sodium	mg/l	1230	27.1	594
Sulphate as SO4	mg/l	334	25.3	180
Mercury	ug/l	-	<0.01	<0.01
Bicarbonate as HCO3	mg/l	-	238	333
Nitrate as N	mg/l	-	4.22	<4.38

Groundwater monitoring (November 2016)

		Site 3 Frontier	Site 5. Four Corners
Date of Sampling		**20-DEC-16**	**20-DEC-16**
Analyte	***Units***	**10:57**	**11:21**
Alkalinity to pH 4.5 as CaCO3	mg/l	211	238
Ammoniacal Nitrogen as N	mg/l	0.03	0.03
Chloride	mg/l	292	43.8
Nitrite as N	mg/l	<0.00400	<0.00400
Nitrogen : Total Oxidised as N	mg/l	7.07	6.99
Carbon, Organic : Total as C :- {TOC}	mg/l	1.8	3.7
Solids, Suspended at 105 C	mg/l	<3	<3
Arsenic	ug/l	2.79	11.2
Cadmium	ug/l	0.618	<0.1
Lead	ug/l	<2	<2
Zinc	ug/l	234	5.59
Calcium	mg/l	86.9	81.8
Magnesium	mg/l	27.3	15.9
Potassium	mg/l	11.8	18.1
Sodium	mg/l	192	42.1
Sulphate as SO4	mg/l	88.2	58.5
Mercury	ug/l	<0.01	<0.01
Bicarbonate as HCO3	mg/l	257	290
Nitrate as N	mg/l	<7.07	<6.99

Groundwater monitoring (December 2016)

3. Habitats

Birds

Nesting Birds of Prey

Annually, the Gibraltar Ornithological and Natural History Society (GOHNS) conduct birds of prey surveys during the breeding season with records being kept specifically on the sightings of Peregrines *Falco peregrinus,* Common Kestrel *Falco tinnunculus,* and Lesser Kestrel *Falco naumanni.* Records of the sightings during 2016 can be seen below.

Lesser and Common Kestrel

Year	Lesser Kestrel	Common Kestrel
2001	9	8
2002	9	9
2003	7	10
2004	9	10
2005	14	10
2006	15	10
2007	19	11
2008	21	11
2009	15	11
2010	16	11
2011	18	9
2012	13	8
2013	5	5
2014	4	6
2015	4	7
2016	1	7

Pairs of Lesser Kestrel & Common Kestrel in Gibraltar

Peregrine Falcon

Year	North face	Catalan Bay	Both Worlds	Oil Tanks	Med Steps	Camp Bay	Mosque	Apes Den	Total
2000	5	3	3	3	2				16
2001	4	2	2	2	3	0			13
2002	5	0	0	2	6	0			13
2003	4	0	0	3	5	0			12
2004	2	0	0	3	4	4			13
2005	2	0	0	2	2	3	0		9
2006	2	2	3	3	4	4	5		23
2007	3	0	3	2	0	1	3		12
2008	3	3	3	4	0	1	3		17
2009	2	2	4	3	3	4	2		20
2010	0	0	3	2	0	2	0		7
2011	2	3	3	0		3	3		14
2012	0	3	2	0		1	2		8
2013	4	3	3	0	3	0	0		13
2014	3	1	2		0		0		6
2015	2	2	0	3		3	0	0	10
2016	3	3	3	0			3	2	14

Blank entries denote no pairs present at this site

Locations and breeding success of Peregrines in Gibraltar

Yellow-legged Gulls

As with previous years, culling initiatives of yellow-legged gulls continues to take place. The table below provides an indication of the demographics being targeted by this effort, and highlights that a total of 3647 yellow-legged gulls were culled in 2016.

	Adults	1st/yr	2nd/yr	3rd/yr	Juvenile	Total
January	367	15	4	1	0	387
February	357	1	3	3	0	364
March	584	4	3	51	0	642
April	400	3	18	51	0	472
May	418	4	1	4	0	427
June	511	3	3	28	312	857
July	57	0	0	0	22	79
August (counts)	0	0	0	0	0	0
September (counts)	8	7	0	0	0	15
October	59	12	1	1	0	73
November	269	3	0	1	1	274
December	57	0	0	0	0	57
Total	3087	52	33	140	335	3647

Total Yellow-legged Gulls culled throughout 2016

Mammals

Barbary Macaques

In 2016, the Barbary Macaque population saw a rise from the previous year with a new total of 184 after 38 births took place. Throughout the year, a total 8 deaths and 7 infant deaths were also recorded.

Year	Population	Deaths	Births	Infant Deaths
2013	209	40	33	6
2014	196	27	26	7
2015	158	7	39	3
2016	184	8	38	7

Barbary Macaque demographics

4. Waste

Hazardous Waste

Hazardous waste materials are stored under strict license conditions and then processed for trans-frontier shipment where they can be adequately disposed of. Typically consisting of waste oils and asbestos containing products, the table below shows a breakdown of total exported hazardous wastes in 2016.

Waste code(s)	Description of Waste	Totals (Metric Tonnes)
06 02 04*	Sodium and Potassium Hydroxide	1.4
06 03 13*	Solid Salts and Solutions containing heavy metals	1.55
06 04 04 *	Wastes containing mercury	0.25
08 01 11*	Waste paint and varnish containing dangerous substances	160.1
08 03 18*	Waste toners (Non Hazardous)	1
12 01 16*	Waste blasting material containing dangerous substances	696.25
13 02 05* 13 02 06* 13 02 07* 13 03 08* 13 03 09* 13 03 10* 13 01 10*	Hydrolic Oils	24
13 04 01* 13 04 02* 13 05 06* 13 05 07* 13 05 08*	Oil Bilge	44.3
13 04 02* 13 04 03*	Bilge Oils	828
13 05 02*	Sludge from oil/water seperators	54.72
13 07 03*	Other Fuels (Including Mixtures)	10.8
14 06 03*	Solvents	0.8
15 01 10*	Packaging containing residues of or contaminated by dangerous substances	4.6

15 02 02*	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths protective clothing contaminated by dangerous substances	34.6
16 01 07*	Oil Filters	3.1
16 01 17*	Scrap Metal	29
16 02 11 *	Discarded Equiptment containing Chlorofluorocarbons	350.48
16 02 13*	Discarded equiptment containing hazardous components	712.54
16 03 05*	Organic wastes containing dangerous substances	15.2
16 05 04*	Gases in pressure containers (including halogens) containing dangerous substances.	0.15
16 06 01*	Lead Batteries	119.845
16 07 08*	Wastes containing oil	396.34
16 10 01*	Aqueous Liquid	20
17 03 01*	Bituminous mixtures	2760
17 04 03*	Lead	16.33
17 04 05*	Non Hazardous Waste Steel	728
17 05 03*	Soils & Stones containing dangerous substances	65.5
17 06 03*	Other insulation materials consisting of or containing dangerous substances	0.35
17 06 05*	Construction materials containing asbestos	717.96
19 01 03*	Fly Ash	3.15
19 01 11*	Bottom ash and slag contaning dangerous substances	15
19 01 13*	Fly Ash containing dangerous substances	2.13
19 08 11*	Sludges containing dangerous substances	48
20 01 01*	Paper & Cardboard	57.5
20 01 21*	Flourescent tubes	1.1
20 01 23*	Discarded Equiptment containing Chlorofluorocarbons	2.4
20 01 25*	Used waste cooking oil	106.06
20 01 33*	Batteries and accumulators	0.5
20 01 35*	Discarded electrical and electronic equiptment	0.04

20 01 36*	Discarded electrical and electronic equiptment	4.251
20 03 01* 20 03 03* 20 03 33*	Municipal Waste	25418.84
20 03 99*	Mattresses	28 Trucks
	Mixed Waste Fuel	6.7

Trans-frontier shipments of hazardous waste in 2016

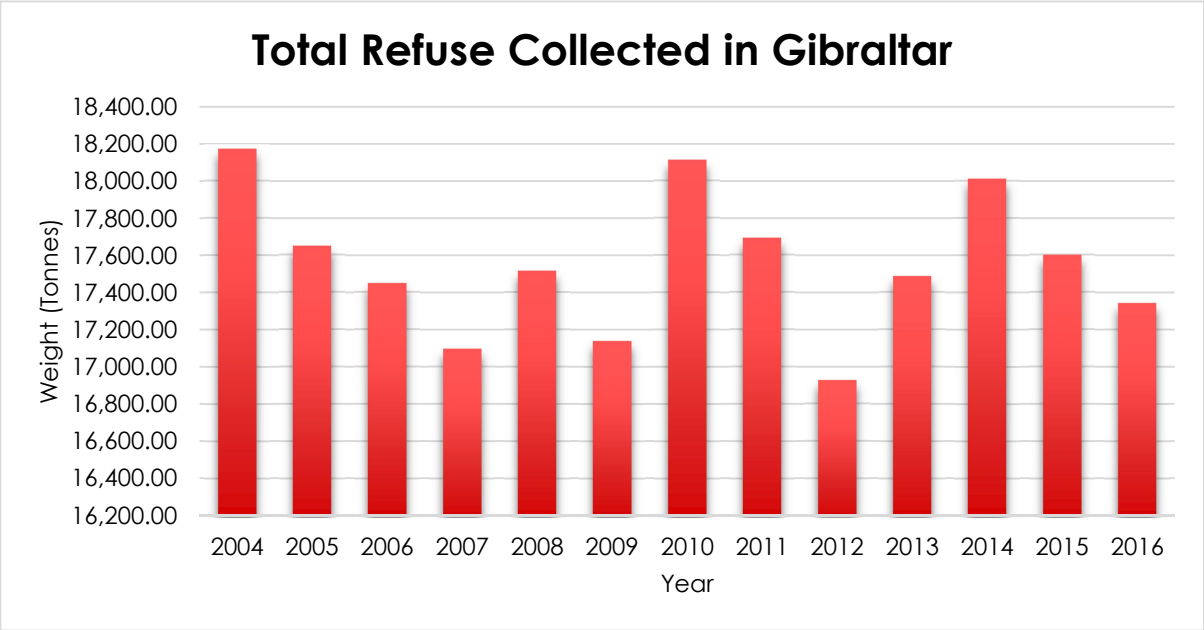
Municipal Waste

In the table below, municipal waste data comprising of general refuse, household waste, and mattresses is shown.

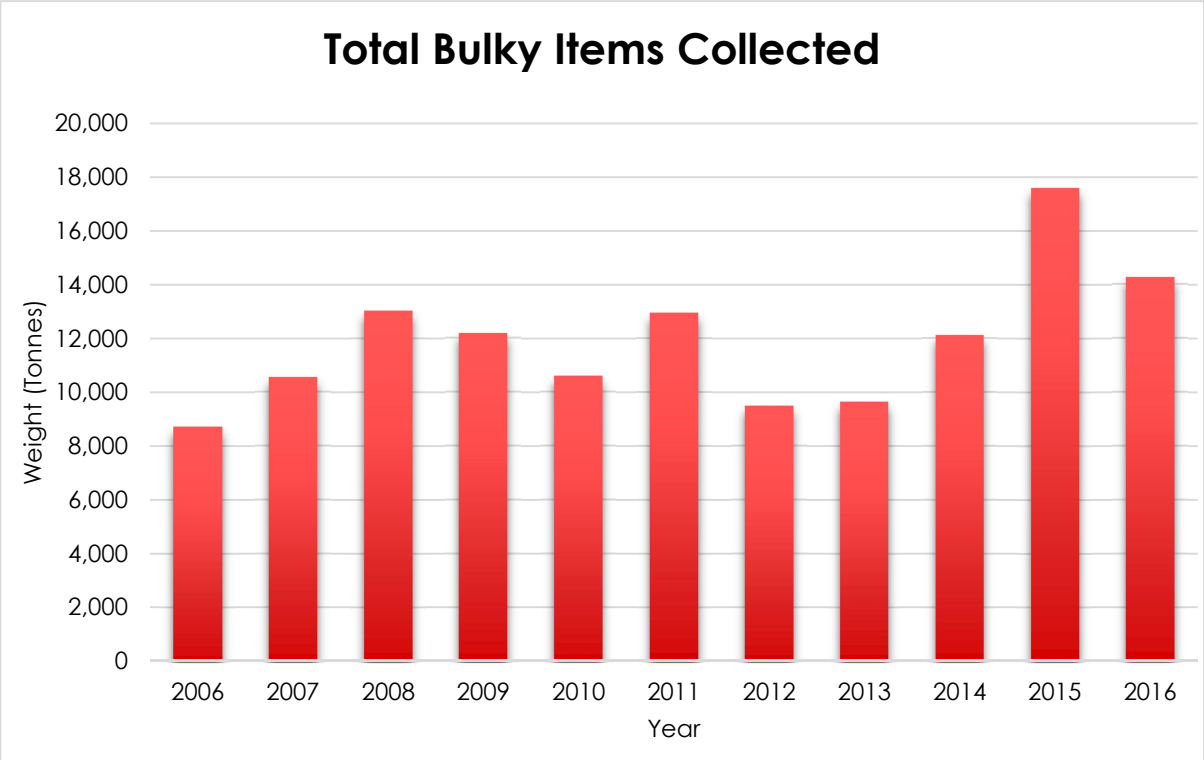
2016	Refuse	Households	Mattresses	Total Refuse Per Month
Month	**Weight (TONs)**	**Weight (TONs)**	**Weight (TONs)**	**Weight (TONs)**
January	1441.20	963.86	11.30	2416.36
February	1384.92	1128.38	9.62	2522.92
March	1418.16	1108.10	1.08	2527.34
April	1442.52	1136.78	8.30	2587.60
May	1410.74	1109.90	7.78	2528.42
June	1520.56	1240.02	6.84	2767.42
July	1402.02	1267.56	7.98	2677.56
August	1428.28	1423.44	2.69	2854.68
September	1483.28	1216.14	7.36	2706.78
October	1398.00	1270.84	9.96	2678.80
November	1431.20	1338.12	8.82	2778.14
December	1582.90	1050.80		2633.70
Total	17343.78	14253.94	82.00	31679.72

Municipal waste in Gibraltar in 2016

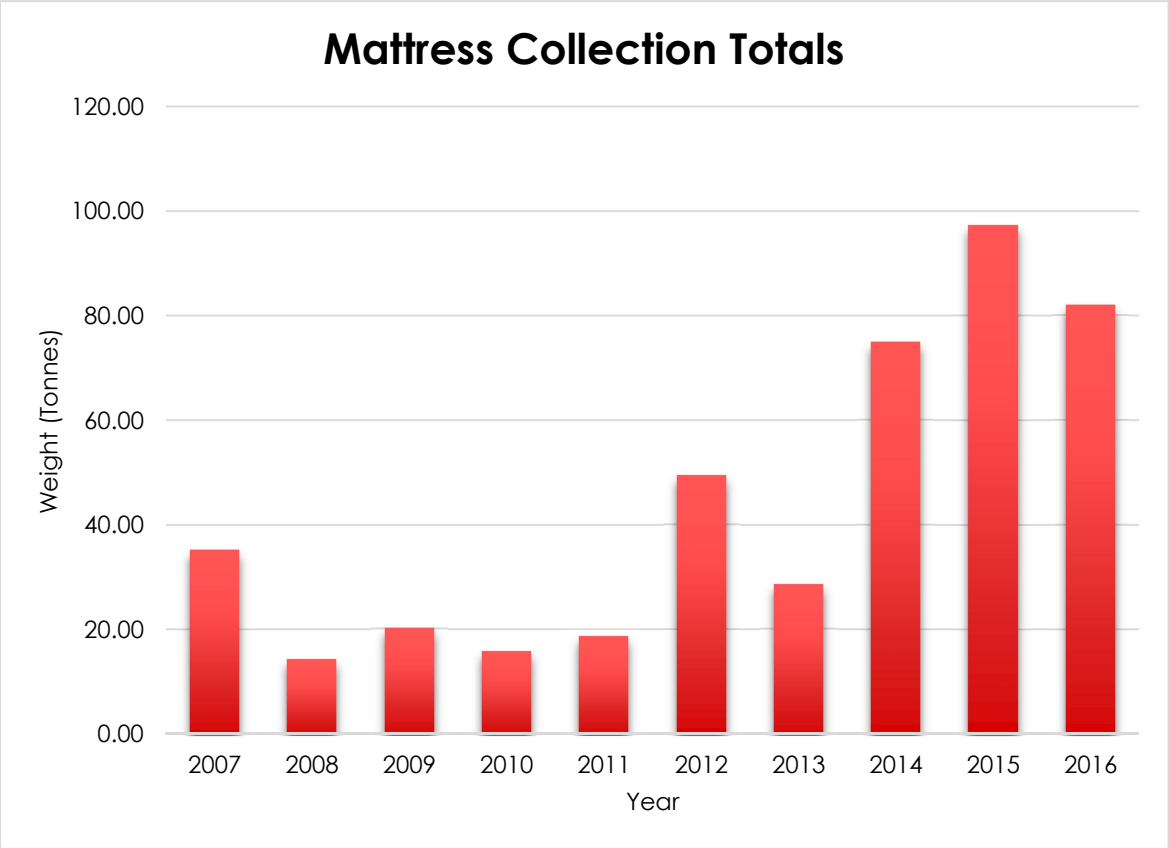
Recording an annual total of 31,679.72 tonnes, an overall decrease in the amount of municipal waste being produced is noted in comparison to 2015. Examining the data closely, a reduction in all classes of general refuse, household waste and mattresses can be identified. The greatest improvement, however, took place with household waste which decreased by a total of 956.74 tonnes.



Annual refuse total comparison (2004-2016)



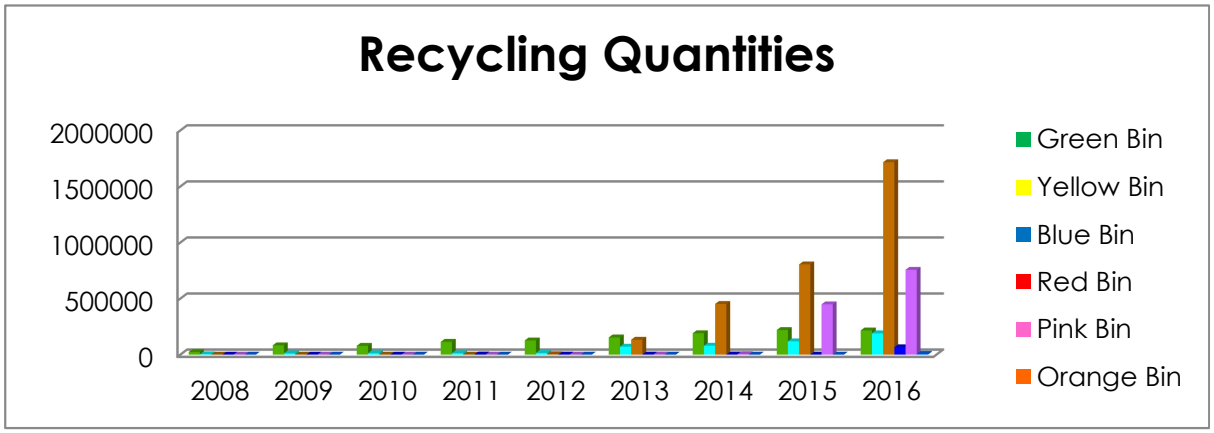
Annual bulky items total comparison (2006-2016)



Annual mattress total comparison (2006-2016)

Recycling

In recent years, kerbside recycling facilities provided across Gibraltar have expanded to over 80 locations, and seen the adoption of new waste streams with the most recent being cooking oil (orange bin). To reflect this growth, the quantity of waste being recycled locally has steadily increased most especially with paper (blue bin) and Waste Electrical and Electronic Equipment (WEEE) (pink bin).



Recycling quantities (2008-2016)

Year	Green Bin	Yellow Bin	Blue Bin	Red Bin	Pink Bin	Orange Bin
2016	215980	189740	1716070	65557	756606	6581

*Weight given in Kilograms (Kgs)

Recycling quantities for 2016

WEEE

Due to the mixed and often hazardous nature of WEEE, local regulations are in place to ensure that all categories of this waste are responsibly handled, treated and disposed of where necessary. The table below highlights which categories are encompassed under this umbrella of enforcement, and details of just how much is being treated and recovered to create a new life cycle.

Year: 2016	Imported		Collected		Sent for treatment		Recovery
Categories	Quantity (No.)	Weight (tons)	Quantity (No.)	Weight (tons)	Quantity (No.)	Weight (tons)	%
Large Household appliances	16173	280.2	0	-	12219	675.8	0
Small Household appliances	1912	360.5	0	-	1157	4.8	0
IT and Telecoms Equipment	6337	21.3	0	-	9463	122.9	0
Consumer Equipment	6310	52676.24	0	-	1135	16.1	0
Lighting equipment	23634	23634	0	-	2487	5	0
Electrical and electronic tools	8046	16.2	0	-	90	1.3	0
Toys, Leisure & Sports Equipment	241	0.8	0	-	97	1.7	0
Medical devices	0	0	0	-	70	0.06	0
Monitoring & Control Instruments	141	0.2	0	-	815	6.5	0
Automatic dispensers	54	0.6	0	-	141	2.6	0
Totals:	62848	76990	0	-	27674	836.6	

WEEE movements and recovery in Gibraltar 2016

	Imported		Collected		Sent for treatment		Recovery	Recycled
Year	Quantity (No.)	Weight (tonnes)	Quantity (No.)	Weight (tonnes)	Quantity (No.)	Weight (tonnes)	%	%
2010	0	0	25010	0.95	0	0	0	0
2011	0	0	1866	2.1155	0	0	0	0
2012	2322	27.4619	41107	1.7845	0	1.34	133.1716	6.498094
2013	1228	7.36858	117	1.33455	0	0.7	190.65	18.11136
2014	313	15.1889	192.5	2.83815	0	0	0	18.68568
2015	154	1.4519	68105	6.95192	0	0	0	478.8153
2016	3573	15.4704	5911	16.19825	12	0.26	6230.096	104.7048

Batteries waste generated in Gibraltar 2010-2016

Clinical Waste

Results for total clinical waste collected, transported and incinerated locally during 2016 are as follows.

	Year:		2016
Month	**No. of Containers**	**Total Litres**	**Total Weight (Kgs)**
January	4779	286740	35842.5
February	4632	277920	34740
March	4929	295740	36967.5
April	4636	278160	34770
May	4550	273000	34125
June	4862	291720	36465
July	4632	277920	34740
August	4998	299880	37485
September	4769	286140	35767.5
October	4862	291720	36465
November	4597	275820	34477.5
December	4744	284640	35580
Total	56990	3419400	427425

Clinical waste collected 2016

	Year:		2016
Month	**No. of Containers**	**Total Litres**	**Total Weight (Kgs)**
January	2288	137280	17160
February	3013	180780	22597.5
March	3224	193440	24180
April	3235	194100	24262.5
May	3099	185940	23242.5
June	2980	178800	22350
July	2829	169740	21217.5
August	3036	182160	22770
September	3036	182160	22770
October	3089	185340	23167.5
November	2728	163680	20460
December	3758	225480	28185
Total	36315	2178900	272362.5

Clinical waste locally incinerated 2016

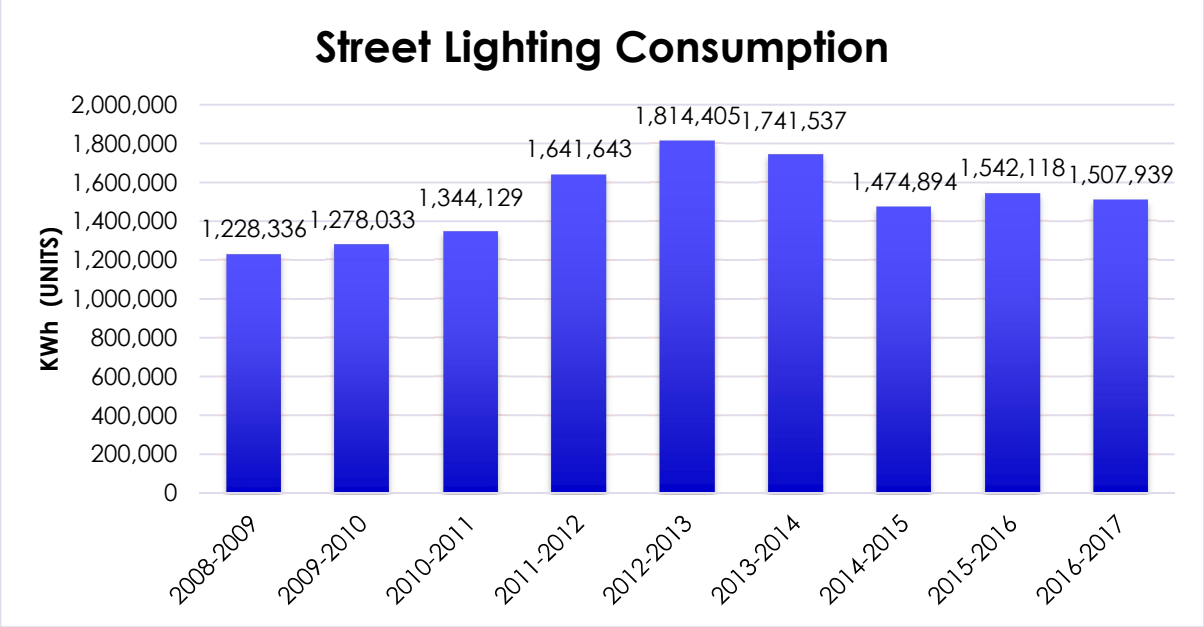
	Year:		2016
Month	**No. of Containers**	**Total Litres**	**Total Weight (Kgs)**
January	3024	181440	22680
February	1728	103680	12960
March	1296	77760	9720
April	1728	103680	12960
May	864	51840	6480
June	2160	129600	16200
July	2160	129600	16200
August	1728	103680	12960
September	1728	103680	12960
October	2160	129600	16200
November	1728	103680	12960
December	0	0	0
Total	20304	1218240	152280

Clinical waste exported for incineration 2016

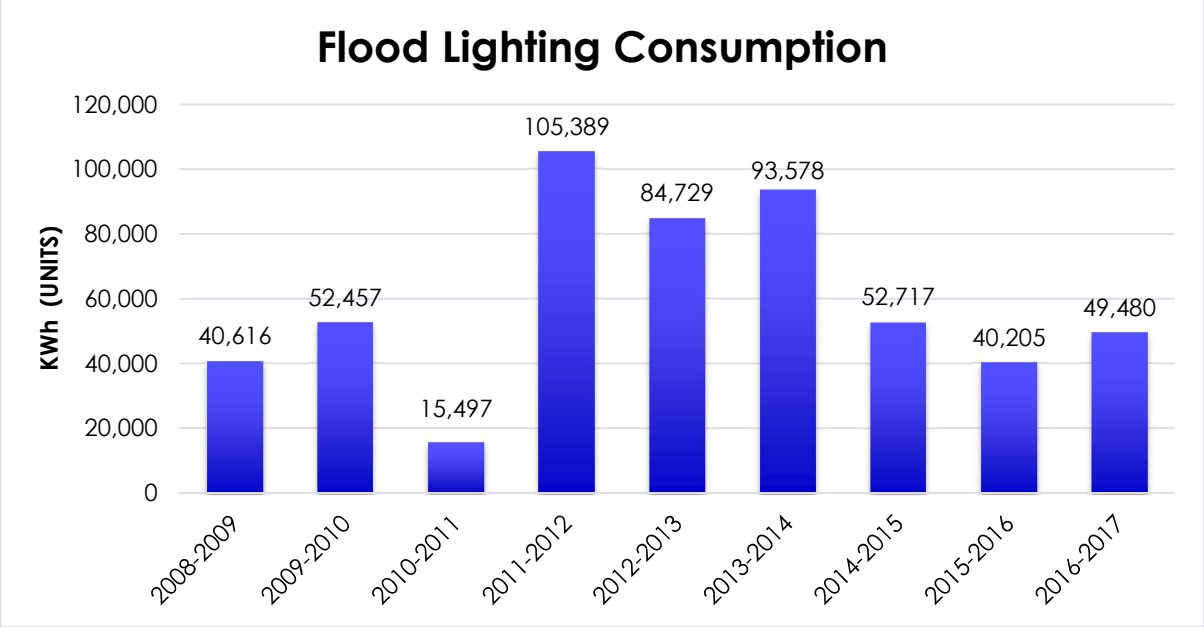
5. Energy

Lighting

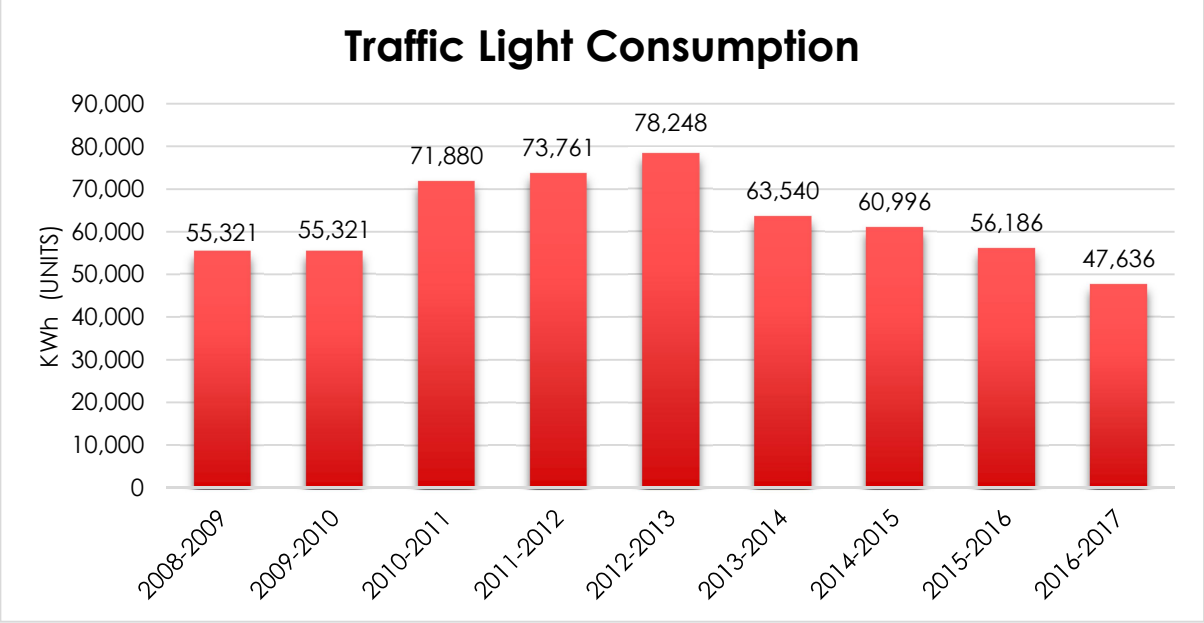
As part of H.M. Government's initiative to improve local energy efficiency, the Gibraltar Electricity Authority (GEA) has systematically carried out the installation of LED lighting throughout different sectors to reduce energy consumption and consequently carbon emissions. Trends showing how this has affected energy consumption from 2008 to 2016 are shown below.



Street lighting consumption (kWh) (Source: GEA)



Flood light consumption (kWh) (Source: GEA)

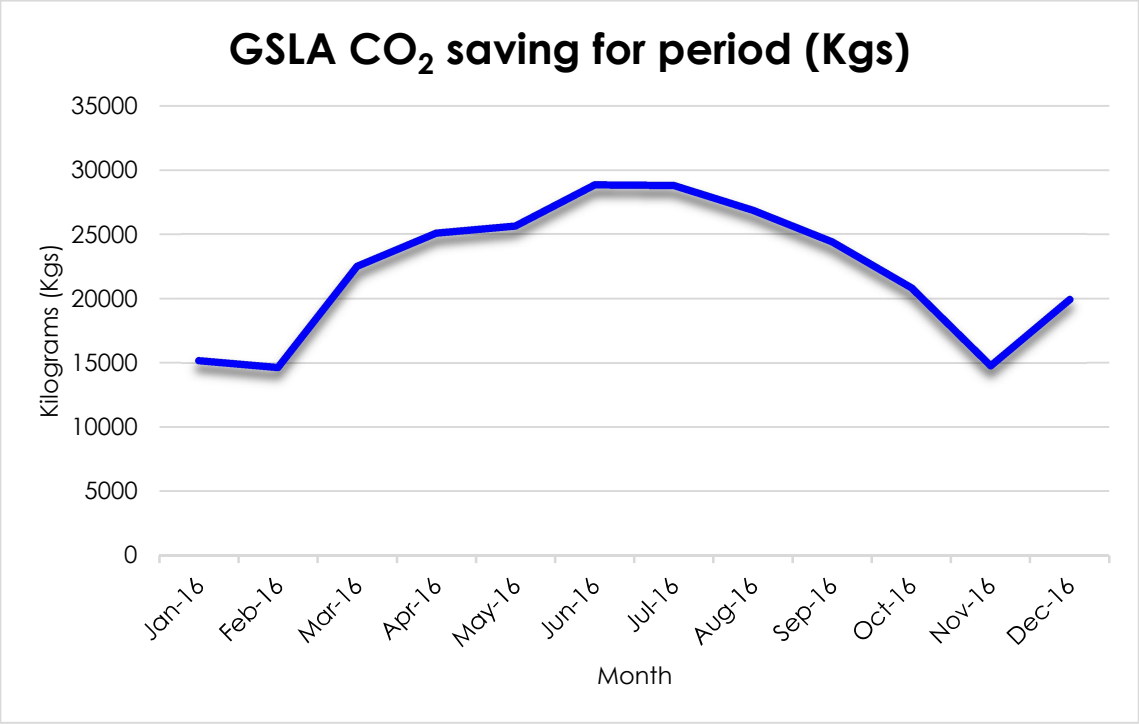


Traffic light consumption (kWh) (Source: GEA)

Solar Energy

In line with EU targets for sourcing 20% of energy by 2020, H.M. Government of Gibraltar is rolling out a number of solar projects. Aimed at reducing carbon emissions from energy consumption, one of the sites equipped with a solar thermal system is GSLA pool.

In the table below, carbon dioxide (CO_2) savings achieved by this renewable energy is illustrated on a monthly basis. Highlighting a lull during the winter months when there is less solar radiation and a pick up during the summer months, the graph shows that the highest CO_2 savings were experienced in June of 2016. In this month, savings were equivalent to taking 66 cars off the road for one year.



GSLA CO2 saving for period (Kgs)