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The Environment Matters

Annual Report 2010

Department of the Environment

Government of Gibraltar

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Executive Summary

The Department of the Environment, along with the Environmental Agency, continues to work towards improving the local environment and ensuring compliance with environmental legislation.

In terms of air quality Gibraltar has once again met the majority of the European Commission's target values for regulated pollutants, including benzene, sulphur dioxide, ozone and carbon monoxide. Gibraltar failed to meet the limit value for nitrogen dioxide at both the Rosia Road and Witham's Road monitoring stations. The Time Extension Notification (TEN) application was submitted to the EU and we are awaiting their decision. An Air Quality Action Plan has been developed and is being implemented to ensure that we are able to meet the limit values in the future. The main action point in relation to NO_2 remains the closure of the existing power stations and the construction of a new up-to-date generating station, away from local residential areas.

Gibraltar also failed to meet the limit values for particulate matter (PM_{10}), even after the removal of the natural component of Saharan dust. The sea salt component could not be calculated due to insufficient data. The EU Commission has rejected Gibraltar's TEN application in respect of PM_{10} due to the fact that we met the limit values in 2009. Gibraltar is awaiting the EU Commission's decision on this breach, following the submission of the 2010 results.

In terms of water quality, Gibraltar entered its second year of coastal water monitoring and will shortly be publishing the River Basin Management Plan for public consultation. Bathing water quality was compromised at Western Beach. This was attributed to discharges from a recently built storm water drain by the municipal authorities in Spain to service La Linea. This Spanish drain acts as a combined sewage/storm water overflow which discharges into the Western Beach basin.

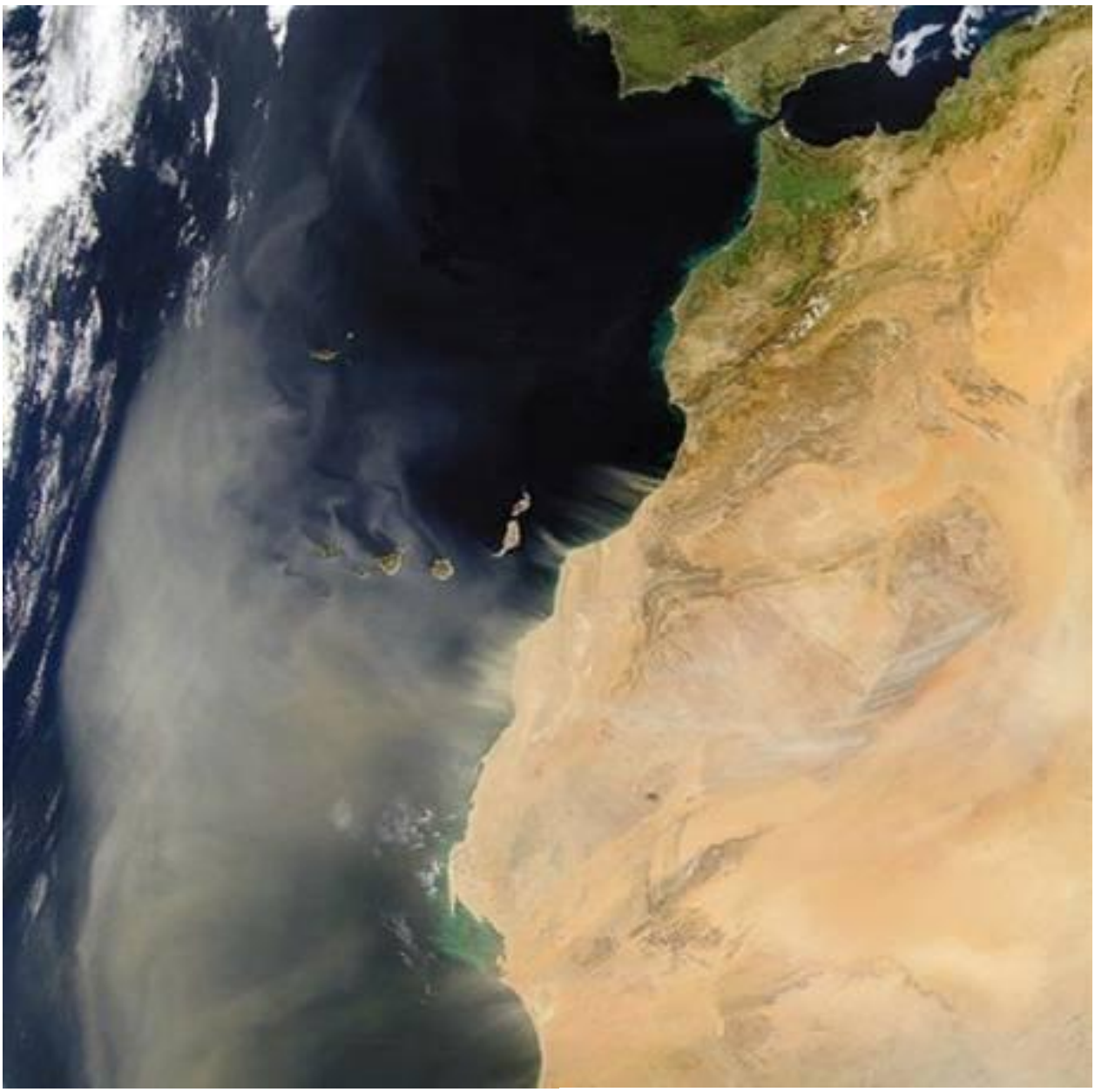
The Department of the Environment completed an Appropriate Assessment for the proposed new power station, resulting in the authorisation of the project for Imperative Reasons of Overriding Public Interest (IROPI). A series of compensatory measures was agreed on by a select committee and these will be put in place, prior to the commencement of any works onsite.

Public awareness and education were again a highlight of the Department's work as it hosted another World Environment Day, highlighting the importance of biodiversity, both locally and globally.

Works envisaged for 2011 include the release of the Epidemiological Study, the Environmental Action & Management Plan and the River Basin District Management Plan as well as ongoing work in the areas of energy, air quality and waste management.

Chapter 1:

Air Quality



Saharan dust en route to Europe

1.1 Introduction

This section of the report provides an overview of Gibraltar's air quality measurements for the calendar year of 2010. It includes data for the automatic and non-automatic monitoring networks.

The Gibraltar Air Monitoring Programme consists of three automatic monitoring stations measuring a variety of pollutants and a passive monitoring network measuring nitrogen dioxide and six species of Volatile Organic Compounds by diffusive samplers. The equipment deployed on the existing network is set out in Table 1.

Table 1.1 The Gibraltar Air Monitoring Programme

Location	Pollutants Measured	Equipment Types
Electricity Offices (Rosia Road)	Sulphur dioxide	API M100E (Ultraviolet flourescence)
	Oxides of nitrogen	API M200E (Chemiluminescence)
	Carbon monoxide	API M300E (Infrared Absorption)
	PM_{10} Gravimetry	R&P Partisol 2025
	$PM_{2.5}$ Gravimetry	R&P Partisol 2025
	PM_{10} Automatic	TEOM FDMS
	Poly Aromatic Hydrocarbons	Digitel High Volume Sampler
	Volatile Organic Compounds	Environment VOC71M Gas Chromatograph
	Wind speed & direction	Gill Windsonic
	Ambient temperature	Met One 592
Bleak House (Near Europa Point)	Oxides of nitrogen	API M200E (Chemiluminescence)
	Ozone	API M400E (Ultraviolet absorption)
	PM_{10} Gravimetry	R&P Partisol 2025
	Wind speed & direction	Gill Windsonic
	Ambient temperature	Met One 592
Witham's Road	Oxides of nitrogen	API M200E (Chemiluminescence)
	Wind speed & direction	Gill Windsonic
	Ambient temperature	Met One 592
Passive Network (Various locations)	Nitrogen Dioxide	Diffusive Samplers - Palmes Tubes at 27 sites
	Volatile Organic Compounds	Diffusive Samplers – SorbentTubes at 15 sites

The instrumentation deployed was selected to ensure robust measurements at the necessary level of accuracy and time resolution to meet the data quality objectives within the European Air Quality Directives and national legislation.

The primary objectives of the monitoring network are:

- To provide the public with rapid and reliable information on urban air quality.
- To monitor compliance with European Directives and local statutory instruments.
- To assist in developing new policies.

The monitoring equipment itself forms only one aspect of the overall Gibraltar Air Monitoring Programme. Appropriate maintenance and support, coupled to a well designed and managed quality control regime, ensure that the raw monitoring data obtained are successfully processed, analysed and interpreted, in order to provide information and ensure compliance requirements under the Air Quality Framework and Air Quality Daughter Directives.

Gibraltar air pollutant measurements are underpinned by a rigorous quality assurance and control programme, central to which are crosschecked calibration standards that are traceable to and compared with internationally recognised metrology standards.

The non-automatic network consists of a diffusion tube programme for Nitrogen Dioxide and Benzene, Toluene and Xylenes (BTX) as well as three partisol filter (Gravimetric) units which are used to monitor particulate matter (PM_{10} & $PM_{2.5}$), Lead, Arsenic, Cadmium, Nickel and a Digitel High Volume Sampler monitoring Poly Aromatic Hydrocarbons (measured as Benzo(a)pyrene).

In addition to meeting the Gibraltar Governments monitoring obligations, the data itself is disseminated in near real-time on the **www.gibraltarairquality.gi** web site. This web-based dissemination and reporting, forms an important tool for delivery of air quality data and descriptive statistics to a broad range of end users.

This provides wide and unrestricted accessibility to air quality data. The archive has been designed to be user-friendly, interactive and responsive. Users may download unlimited portions of the database in spreadsheet format or graphs. The website has proved, and continues to prove, popular as demonstrated in Table 1.2, overleaf.

Table 1.2 Gibraltar Air Quality Website Hits 2010

Month	Unique visitors	Number of visits	Hits
Jan	1911	5705	55614
Feb	1909	4871	48294
Mar	2001	6185	53364
Apr	1632	5044	42371
May	1513	4268	44874
Jun	1735	3299	57531
Jul	1522	2829	47733
Aug	1244	2786	39958
Sep	1241	2432	33494
Oct	1272	2146	48779
Nov	1136	2207	38621
Dec	1259	3296	28923
Total	18375	45068	539556

1.2 Gibraltar Air Quality Standards

Standards and objectives are set for air pollutant concentrations in ambient air, over a given time period, that are considered to be acceptable in the light of what is known about the effects of each pollutant on health and on the environment. They can also be used as a benchmark to see if air pollution is getting better or worse.

The Gibraltar ambient air quality standards, in place for the purpose of Local Air Quality Management, are found in the Environment(Air Quality Standards) Regulations 2010.This transposed into Gibraltar law the latest Air Quality Directive 2008/50/EC (known as the CAFÉ Directive - Clean Air For Europe), which merged all existing air quality directives into a single Directive. It also lays down Air Quality values for $PM_{2.5}$.

A summary of the current Gibraltar Air Quality Objectives is set out in Table 1.3.

Table 1.3: Summary of Current Gibraltar Air Quality Objectives

Pollutant	Objective	Measured as	To be achieved by
Benzene	5 µg/m^3	Annual Mean	1 January 2010
Carbon monoxide	10.0 mg/m^3	Maximum daily running 8 Hour Mean	1 January 2005
Lead	0.5 µg/m^3	Annual Mean	1 January 2005
Nitrogen dioxide	200µg/m^3 Not to be exceeded more than 18 times per year	1 Hour Mean	1 January 2010
	40 µg/m^3	Annual Mean	1 January 2010
Nitrogen Oxides**	(V) 30 µg/m^3	Annual Mean	19 July 2001
Ozone	120 µg/m^3	Daily maximum running 8 hr mean not to be exceeded more than 25 times per calendar year averaged over 3 years	1 January 2010
Particles[a] (PM10) (gravimetric)	50µg/m^3 Not to be exceeded more than 35 times per year	24 Hour Mean	1 January 2005
	40 µg/m^3	Annual Mean	1 January 2005
Sulphur dioxide	350µg/m^3 Not to be exceeded more than 24 times per year	1 Hour Mean	1 January 2005
	125µg/m^3 Not to be exceeded more than 3 times per year	24 Hour Mean	1 January 2005
	(V) 20 µg/m^3	Annual Mean	19 July 2001
	(V) 20 µg/m^3	Winter Mean (01 October – 31 March)	19 July 2001
Arsenic	6 ng/m^3	Annual Mean	31 December 2012
Cadmium	5 ng/m^3	Annual Mean	31 December 2012
Nickel	20 ng/m^3	Annual Mean	31 December 2012
PAH (Benzo[a]pyrene*)**	1 ng/m^3	Annual Mean	31 December 2012

Notes:

a. Measured using the European gravimetric transfer sampler or equivalent.

µg/m^3 – micrograms per cubic metre

mg/m^3 – milligrams per cubic metre

ng/m^3 – nanograms per cubic metre

** Assuming NOx is taken as NO_2

*** Benzo[a]pyrene is used as a marker for the carcinogenic risk of polycyclic aromatic hydrocarbons in ambient air.

(V) These standards are adopted for the protection of vegetation and ecosystems. All of the remainder are for the protection of human health.

1.3 Annual Automatic Data Summary Reports

All the data in this report has been fully ratified. All gaseous pollutant mass units are at 20 C and 1013mb. Particulate matter concentrations are reported at ambient temperature and pressure.

Note: For a strict comparison against the objectives there must be a data capture of >90% throughout the calendar year.

1.3.1 Rosia Road: 1st January to 31st December 2010

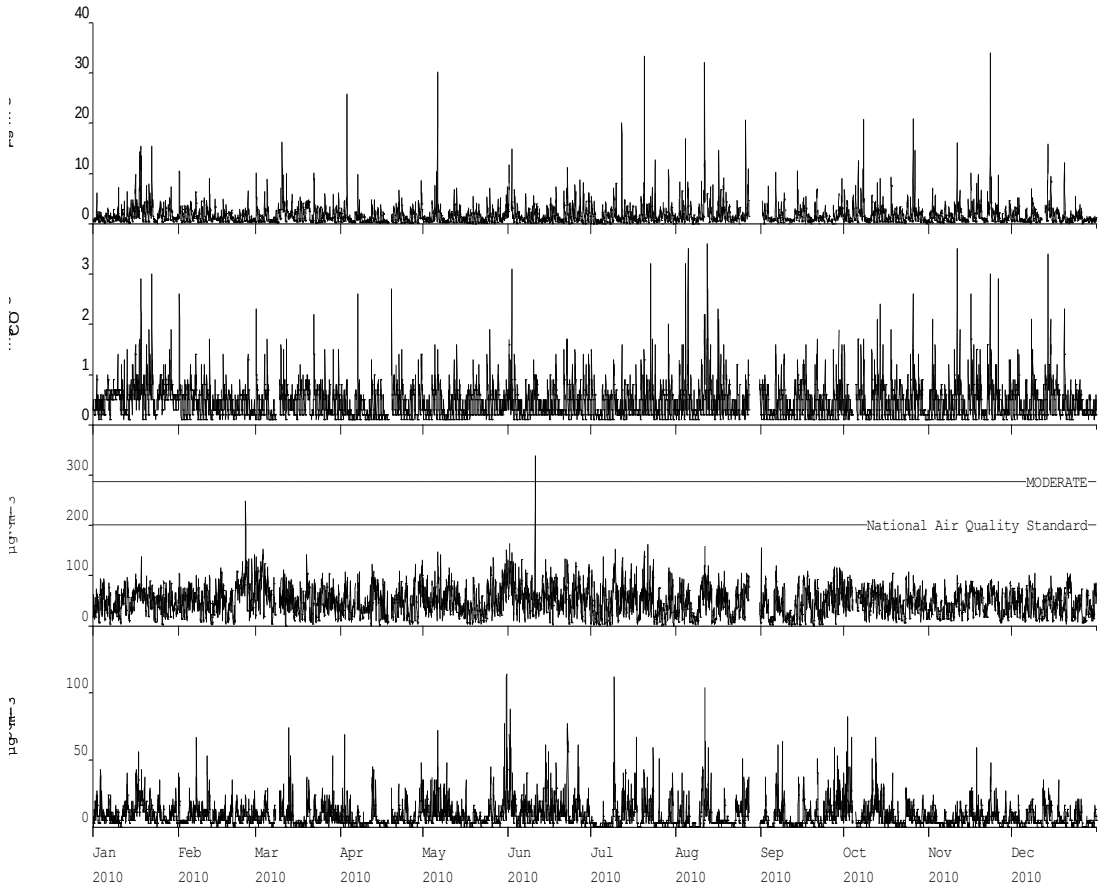
Table 1.4

POLLUTANT	BENZ	CO	NO_2	SO_2
Number Very High	-	0	0	0
Number High	-	0	0	0
Number Moderate	-	0	1	0
Number Low	-	8509	8494	33323
Maximum 15-minute mean	-	6.7 mg m^{-3}	642 µg m^{-3}	202 µg m^{-3}
Maximum hourly mean	34.03 µg m^{-3}	3.6 mg m^{-3}	338 µg m^{-3}	114 µg m^{-3}
Maximum running 8-hour mean	14.98 µg m^{-3}	1.9 mg m^{-3}	135 µg m^{-3}	66 µg m^{-3}
Maximum running 24-hour mean	7.89 µg m^{-3}	1.3 mg m^{-3}	114 µg m^{-3}	35 µg m^{-3}
Maximum daily mean	7.68 µg m^{-3}	1.1 mg m^{-3}	111 µg m^{-3}	33 µg m^{-3}
Average	1.75 µg m^{-3}	0.5 mg m^{-3}	48 µg m^{-3}	9 µg m^{-3}
Data capture	93.9 %	97.3 %	97.0 %	97.1 %

Table 1.5

Pollutant	Public Health (Air Quality Limit Values) Rules 2002, (Amendment) Rules 2003 and (Ozone) Rules 2004	Exceedences	Days
Carbon Monoxide	Running 8-hour mean > 10.0 mg m^{-3}	0	0
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	1	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	3	2
Sulphur Dioxide	15-minute mean > 266 µg m^{-3}	0	0
Sulphur Dioxide	Hourly mean > 350 µg m^{-3}	0	0
Sulphur Dioxide	Daily mean > 125 µg m^{-3}	0	0
Sulphur Dioxide	Annual mean > 20 µg m^{-3}	0	-

Graph 1.1: Hourly Mean Data for 1st January to 31st December 2010



1.3.2 Bleak House: 1st January to 31st December 2010

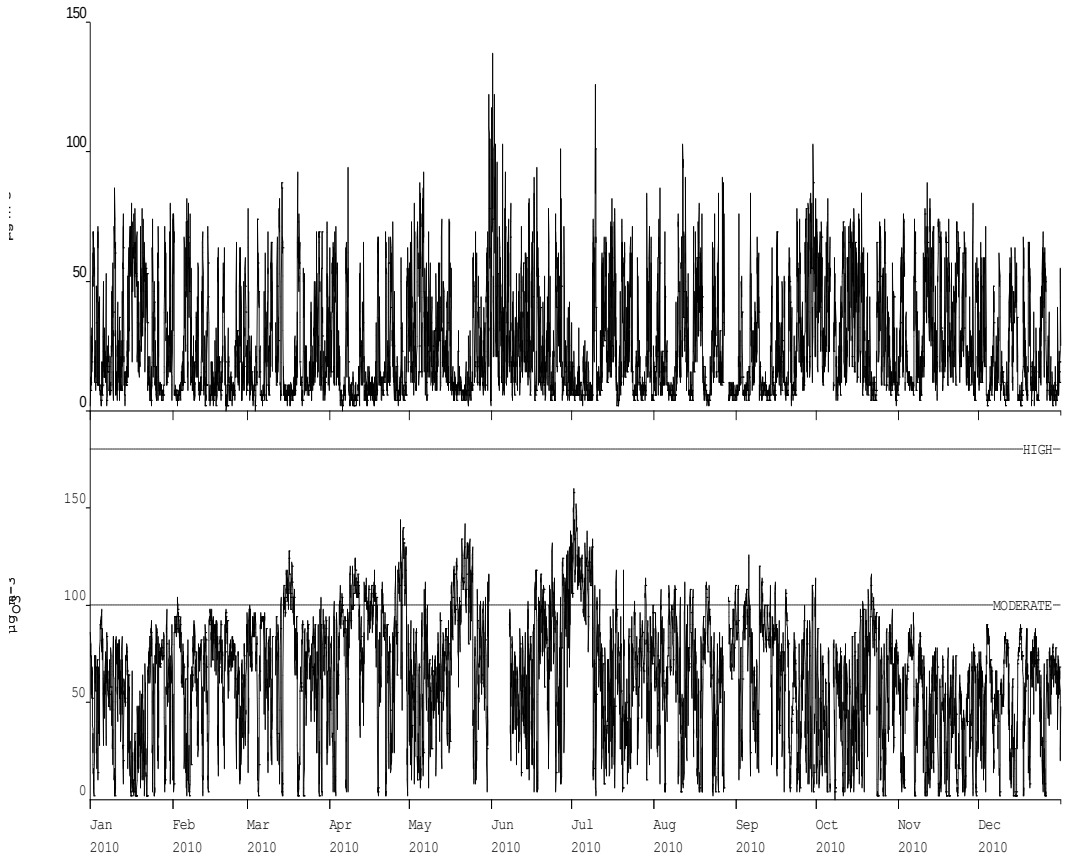
Table 1.6

POLLUTANT	NO_2	O_3
Number Very High	0	0
Number High	0	0
Number Moderate	0	1183
Number Low	8628	7303
Maximum 15-minute mean	159 µg m^{-3}	190 µg m^{-3}
Maximum hourly mean	138 µg m^{-3}	160 µg m^{-3}
Maximum running 8-hour mean	99 µg m^{-3}	151 µg m^{-3}
Maximum running 24-hour mean	77 µg m^{-3}	136 µg m^{-3}
Maximum daily mean	74 µg m^{-3}	135 µg m^{-3}
Average	26 µg m^{-3}	64 µg m^{-3}
Data capture	98.5 %	96.6 %

Table 1.7

Pollutant	Public Health (Air Quality Limit Values) Rules 2002, (Amendment) Rules 2003 and (Ozone) Rules 2004	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	0	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	0	0
Ozone	Running 8-hour mean > 120 µg m^{-3}	156	19

Graph 1.2: Hourly Mean Data for 1st January to 31st December 2010



1.3.3 Witham's Road: 1st January to 31st December 2010

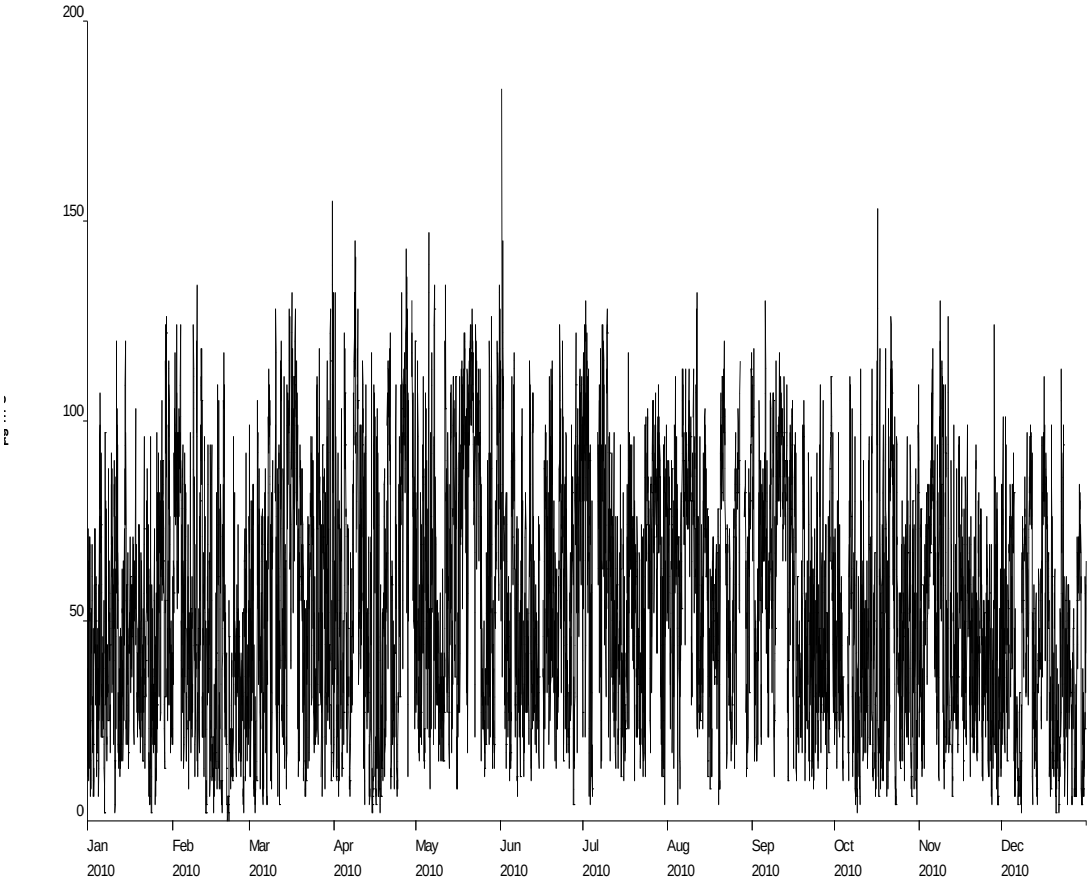
Table 1.8

POLLUTANT	NO_2
Number Very High	0
Number High	0
Number Moderate	0
Number Low	8520
Maximum 15-minute mean	229 µg m^{-3}
Maximum hourly mean	183 µg m^{-3}
Maximum running 8-hour mean	127 µg m^{-3}
Maximum running 24-hour mean	114 µg m^{-3}
Maximum daily mean	111 µg m^{-3}
Average	55 µg m^{-3}
Data capture	97.3 %

Table 1.9

Pollutant	Public Health (Air Quality Limit Values) Rules 2002, (Amendment) Rules 2003 and (Ozone) Rules 2004	Exceedences	Days
Nitrogen Dioxide	Annual mean > 40 µg m^{-3}	1	-
Nitrogen Dioxide	Hourly mean > 200 µg m^{-3}	0	0

Graph 1.3 Hourly Mean Data for 1st January to 31st December 2010



1.4 Overview of Gibraltar's automatic air pollution measurements

The data capture figures reflect data capture over the whole year, 1st January to 31st December 2010.

Table 1.10: Data capture in 2010 (%)

	UK	Gibraltar
NO_2 and NO_x	**89**	**98**
SO_2	81	95
CO	84	93
PM_{10} (grav.)	93	97
$PM_{2.5}$ (grav.)	92	97
O_3	94	97
Benzene	77	94

Gibraltar data capture remains above 90% for all pollutants for both the automatic and non-automatic monitoring. Gibraltar data capture is on average higher than UK national networks and has been since its inception. Our target is to obtain at least 90% data capture in any one year. Any problems with the analysers have been attended to promptly, helping to maintain these high levels.

1.4.1 Carbon Monoxide

Carbon monoxide (CO) is a colourless, odourless, poisonous gas produced by incomplete or inefficient combustion of fuel. It is produced predominantly by the road transport sector, particularly by petrol engines. It prevents the normal transport of oxygen by the blood, which in turn can lead to a significant reduction in the supply of oxygen to the heart, particularly in people suffering from heart disease.

This pollutant is measured at the Rosia Road station.

Air quality objective for CO (as maximum daily running 8hr mean)	Recorded levels (as maximum daily running 8hr mean)
10.0 mg m^{-3}	**1.9 mg m^{-3}**

Gibraltar's recorded levels are well below the maximum permissible under the Air Quality Rules (and EU Directives). The level recorded this year is the same as last year's and in general, carbon monoxide levels over the last 6 years show that we are well within the recommended levels for this pollutant.

SUMMARY: There were no exceedences of the carbon monoxide air quality objectives within our National Rules or the European Limit Values.

1.4.2 Nitrogen Dioxide

Nitrogen oxides (NO_x) is a collective term used to refer to two species of oxides of nitrogen, nitric oxide (NO) and nitrogen dioxide (NO_2). NO is mainly derived from road transport emissions and other combustion processes such as electricity supply. NO is not considered to be harmful to health, however, once released into the atmosphere, NO is very rapidly oxidised to NO_2 which can be harmful to human health, irritating the lungs and lowering resistance to respiratory infections such as influenza.

This pollutant is measured at Rosia Road, Witham's Road and Bleak House monitoring stations.

There are two air quality objectives for NO_2: a long-term annual mean objective, set to protect against long-term exposure to elevated NO_2 concentrations; and a short-term 1-hour objective set to protect against short-term elevated NO_2 concentrations.

Annual Objective

The annual mean air quality objective for NO_2 is 40 µg m^{-3}, to be achieved by 2010.

Air Quality Objective for NO_2	Recorded Annual Mean
40 µg m^{-3}	**48 µg m^{-3} (Rosia Road)** **55 µg m^{-3} (Witham's Road)** **26 µg m^{-3} (Bleak House)**

Gibraltar once again exceeded the NO_2 Annual Mean at both the Rosia Road and Witham's Road stations. As a result, the Government of Gibraltar has submitted its Time Extension Notification (TEN) to the European Commission. This was accompanied by a comprehensive Air Quality Action Plan, which is discussed in more detail in section 1.7.

Hourly Objective

The 1-hour air quality objective for nitrogen dioxide is 200µg m^{-3} not to be exceeded more than 18 times per year.

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	**338 µg m^{-3} (Rosia Road)** **183 µg m^{-3} (Witham's Road)** **138 µg m^{-3} (Bleak House)**

SUMMARY: There were 3 exceedences of the 1-hour air quality objective for nitrogen dioxide at the Rosia Road station.

1.4.3 Sulphur Dioxide

Sulphur Dioxide (SO_2) is produced when a material, or fuel, containing sulphur is burned. Globally, much of the sulphur dioxide in the atmosphere comes from natural sources, but in Gibraltar the predominant source is the power station and shipping burning fuel oils.

Even moderate concentrations of sulphur dioxide may result in a fall in lung function in asthmatics. Tightness in the chest and coughing occur at high levels and lung function of asthmatics may be impaired to the extent that medical assistance is required. Sulphur dioxide pollution is considered more harmful when particulate and other pollution concentrations are high.

This pollutant is measured at the Rosia Road station.

There are two air quality objectives set for SO_2, a daily mean objective and a 1-hour objective.

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	**33 µg m^{-3}**
Air Quality Objective for SO_2 (1 hour mean)	**Recorded 1 hour mean**
350 µg m^{-3} not to be exceeded more than 24 times per year	**114 µg m^{-3}**

SUMMARY: There were no exceedences of either limit value for sulphur dioxide in 2010.

1.4.4 Benzene

Benzene is a volatile organic compound which is a minor constituent of petrol (approximately 1% by volume). The main sources of atmospheric benzene in Europe are the distribution and combustion of petrol. Of these, combustion by petrol vehicles is the single biggest source.

Possible chronic health effects include cancer, central nervous system disorders, liver and kidney damage, reproductive disorders and birth defects.

This pollutant is measured at the Rosia Road station. The air quality objective for benzene is 5 µg m^{-3}, measured as an annual mean. In 2010, the annual mean was measured at 1.75 µg m^{-3}, which is below the Benzene Annual Mean Limit Value.

Air Quality Objective for Benzene (Annual Mean)	Recorded Annual Mean
5 µg m^{-3}	**1.75 µg m^{-3}**

SUMMARY: There was no exceedence of the Benzene annual mean objective in 2010.

1.4.5 Ozone

Ozone (O_3) is not directly emitted from any man-made source in significant quantities. In the lower atmosphere, O_3 is primarily formed by the sunlight-initiated oxidation of volatile organic compounds (VOCs) in the presence of nitrogen oxides (NO_x). The sources of VOCs are similar to those described for NO_x above, but also include other activities such as solvent use and petrol handling & distribution.

The chemical reactions do not take place instantaneously, therefore ozone measured at a particular location may have arisen from VOC and NO_x emissions many hundreds or even thousands of miles away. Maximum concentrations generally occur downwind of the source areas of the precursor pollutant emissions. Ozone irritates the airways of the lungs, increasing the symptoms of those suffering from asthma and lung diseases.

This pollutant is measured at Bleak House Station.

The air quality target value for ozone is expressed as a maximum daily 8 hour mean of 120 µg m^{-3}.

This value should not be exceeded more than 25 days per calendar year, averaged over 3 years. The target value was exceeded on 19 days during 2010. The maximum hourly mean was recorded as 160 µg m^{-3}, which is below the EU Information Threshold of 180 µg m^{-3} and the EU Alert Threshold of 240 µg m^{-3}.

Air Quality Objective for Ozone (Maximum Daily 8 Hour Mean)	Recorded Daily 8 hour Mean
120 µg m^{-3} not to be exceeded more than 25 days per calendar year, averaged over 3 years.	**160 µg m^{-3} Target value exceeded on 20 days**

SUMMARY: There was no exceedence of the Ozone objective.

Overview of Gibraltar's non-automatic air pollution measurements

1.5.1 Lead

The majority of Lead (Pb) emissions arise from vehicles fuelled with leaded petrol. Industry, in particular secondary non-ferrous metal smelters, may contribute to emissions of lead in industrial areas, though none exist within Gibraltar. This source can become increasingly significant due to the reduction in the lead content of leaded petrol and the increasing use of unleaded petrol (leading to significant reductions in urban lead levels).

Even small amounts of lead can be harmful, especially to infants and young children. In addition, lead taken in by the mother can interfere with the health of the unborn child. Exposure has also been linked to impaired mental function, visual-motor performance and neurological damage in children, and memory and attention span.

The air quality objective for lead is 0.5µg m^{-3} measured as an annual mean to have been achieved by 2005. The 2010 annual mean was measured at 0.01µg m^{-3}.

Air Quality Objective for Lead (measured as an annual mean)	Recorded Annual Mean
0.5µg m^{-3}	**0.01µg m^{-3}**

SUMMARY: There was no exceedence of the lead annual mean objective.

1.5.2 Particulate Matter (PM_{10})

Fine particles are composed of a wide range of materials arising from a variety of sources including:

- combustion sources (mainly road traffic);
- secondary particles, mainly sulphate and nitrate formed by chemical reactions in the atmosphere, and often transported from far across Europe;
- coarse particles, suspended soils and dusts (e.g. from the Sahara), sea salt, biological particles and particles from construction work.

Particles are measured in a number of different size fractions according to their mean aerodynamic diameter. Most of the monitoring requirements are currently focused on PM_{10}, but the finer fractions such as $PM_{2.5}$ and PM_1 are becoming of increasing interest in terms of health effects. Fine particles can be carried deep into the lungs where they can cause inflammation and a worsening of the condition of people with heart and lung diseases. In addition, they may carry surface-absorbed carcinogenic compounds into the lungs.

There are two air quality objectives set for particulate matter (measured as the PM_{10} size fraction) - a daily mean objective and an annual mean objective.

The annual mean air quality objective for PM_{10} is 40µg m^{-3}, the Daily mean objective is set at 50 µg m^{-3}, not to be exceeded on more than 35 days per year. These objectives were to be met by 2005. The 2010 corrected annual mean was measured as 40.6µg m^{-3} and the daily mean of 50 µg/m^3 was exceeded on 64 occasions. However, following adjustments for natural sources, the annual mean has been reduced to 38.6 µg m^{-3} and the daily exceedences have been reduced to 50.

Air Quality Objective for PM_{10} (measured as an annual mean)	Recorded Annual Mean
40 µg m^{-3}	**38.6 µg m^{-3}**
Air Quality Objective for PM_{10} (measured as a daily mean)	**No. of exceedences of maximum daily mean**
50 µg m^{-3} not to be exceeded more than 35 times in a year	**50**

The report "**Measured PM_{10} concentrations in Gibraltar in 2010 - removal of the natural component"** can be viewed on the following web address: - http://www.gibraltarairquality.gi/documents/Gib_natural_quantification_2010_v1.pdf

Table 1.11 PM_{10} Statistics for Rosia Road

	2006	2007	2008	2009	2010
Valid Days of Data	362	362	330	356	
% Data Capture	99	99	90	98	95
Annual Mean PM_{10} (40 µg m^{-3})*	39.7	45	41	38.2	40.6**
Max. 24-hour mean PM_{10}	91.9	249.8	179	79	130
Days > 50 µg m^{-3} (35 day limit)*	61	109	63	37	64***

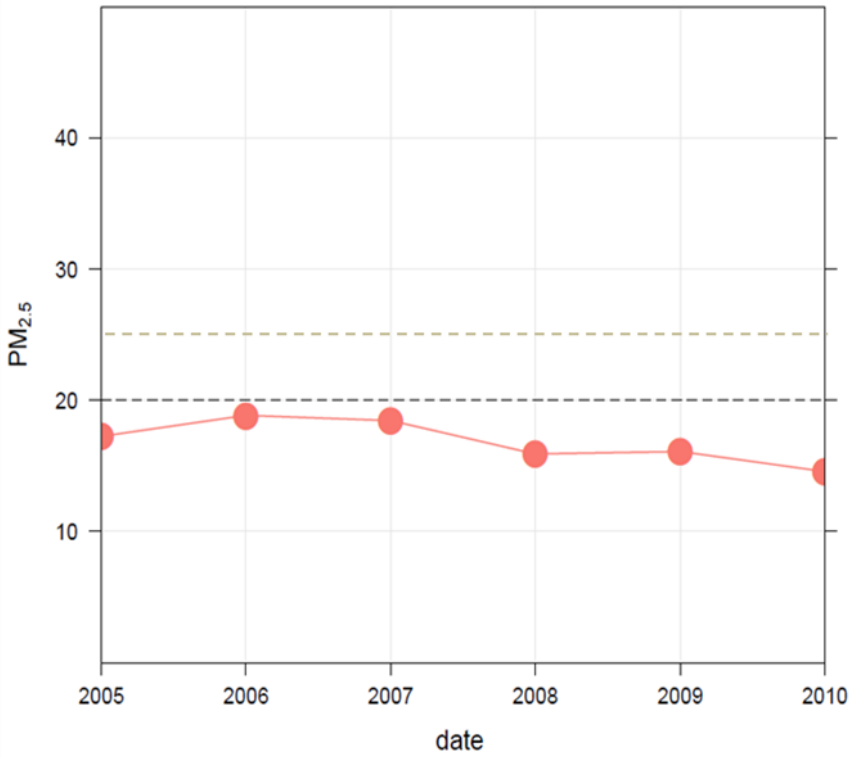
* Limit values – annual mean and maximum number of days; daily limit value can be exceeded
** This figure has been reduced to 38.6 µg m^{-3} after adjustments for natural sources
*** This figure has been reduced to an estimated 50 exceedences following the removal of natural components.

SUMMARY: The daily limit value for PM_{10} has been exceeded. Gibraltar's application for a Time Extension Notification for PM_{10} was rejected by the Commission. Further details of how Gibraltar intends to meet future PM_{10} limit values are contained in the Air Quality Action Plan.

1.5.3 Particulate Matter ($PM_{2.5}$)

Particulate matter $PM_{2.5}$ was measured at the Rosia Road station in compliance with Part 4 of the Environment (Air Quality Standards) Regulations 2010. The annual mean was measured at 14.6ug m^{-3}, down from last year. This figure, together with the 2009 and 2011 figures, will be used to establish the Annual Exposure Indicator (AEI) for 2010. Based on the AEI for 2010, the national exposure reduction target for Gibraltar will be established in accordance with the table in Section B of Annex XIV to Directive 2008/50/EC.

Graph 1.4: $PM_{2.5}$ concentrations from 2005 to 2010



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

Arsenic, Cadmium and Nickel are human genotoxic carcinogens. Evidence suggests that there is no identifiable threshold below which these substances do not pose a risk to human health. Impact on human health and the environment occurs via concentrations in ambient air and via deposition. The major sources of these metals in the Gibraltar region are likely to be shipping and power generation. Target values are set with the aim of minimising the harmful effects of airborne arsenic, cadmium and nickel on human health, paying particular attention to sensitive populations, and the environment as a whole.

Polycyclic Aromatic Hydrocarbons are toxic organic micro pollutants (TOMPS) that cause a wide range of effects, from cancer to reduced immunity to nervous system disorders and interfere with child development. There is no "threshold" dose - the tiniest amount can cause damage. Target values are set with the aim of minimising the harmful effects of airborne Polycyclic Aromatic Hydrocarbons on human health, paying particular attention to sensitive populations, and the environment as a whole. Benzo[a]pyrene is used as a marker for the carcinogenic risk of polycyclic aromatic hydrocarbons in ambient air.

Monitoring in Gibraltar to support a Preliminary Assessment under 4th Daughter Directive began in late 2005.

Table 1.12: Pollutants regulated by the 4th Daughter Directive

Pollutant	Parameter	Target Value	Recorded Average
Arsenic	Annual average	6 ng m^{-3}	0.96 ng m^{-3}
Cadmium	Annual average	5 ng m^{-3}	0.23 ng m^{-3}
Nickel	Annual average	20 ng m^{-3}	15.78 ng m^{-3}
BAP	Annual average	1 ng m^{-3}	0.09 ng m^{-3}

The annual averages recorded reveal that arsenic, cadmium, nickel and poly aromatic hydrocarbons are well below their corresponding target values in 2010.

1.6 Diffusion Tube Networks

Diffusion tube samplers are used to measure nitrogen dioxide (NO_2) and hydrocarbons across Gibraltar. Monitoring sites were selected to include areas likely to be affected by specific emission sources (such as heavy traffic, power generation plants, petrol stations, or vents from fuel storage), as well as general background locations.

NO_2 and hydrocarbon (BTEX) diffusion tubes are exposed for 4-week periods and are bias adjusted using data from co-location studies carried out at Rosia Road, Witham's Road and Bleak House. The precision of NO_2 and BTEX tubes was very good and the accuracy was within the expected range for an indicative method such as diffusive samplers (+/-25%).

1.6.1 Summary of Hydrocarbon Results

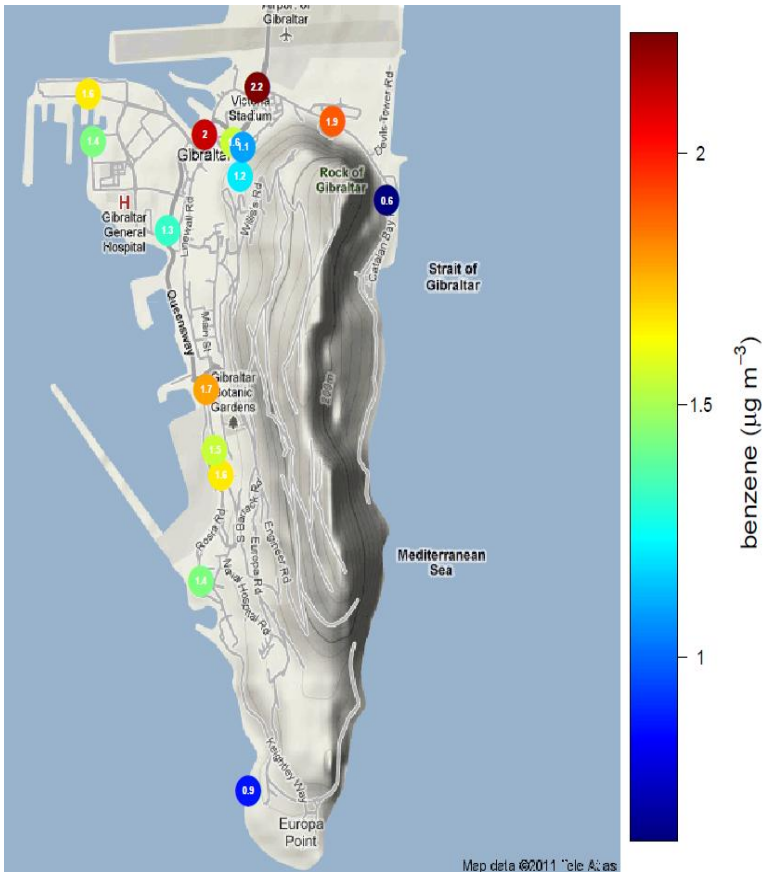
A summary of 2010 annual average hydrocarbon concentrations is shown in Table 1.13. Bias adjustment factors derived from the co-location study at Rosia Road have been applied to these annual means.

Table 1.13 Average hydrocarbon concentrations

Code	Site	Conc. (µg m^{-3})
GIB20	Sundial Roundabout	2.2
GIB5	Glacis Road	2
GIB4	Devils Tower Road	1.9
GIB1	Rosia Road	1.7
GIB3	Jumpers	1.6
GIB17	Kings Lines Fuel Depot	1.6
GIB19	North Mole	1.6
GIB30	Governors Meadow House	1.5
GIB7	Harbour Views	1.4
GIB21	Anchorage Rosia Road	1.4
GIB6	Queensway	1.3
GIB18	Moorish Castle Estate	1.2
GIB16	Laguna Estate	1.1
GIB2	Bleak House	0.9
GIB15	Catalan Bay Road	0.6

Annual mean benzene levels across Gibraltar in 2010 are shown in Figure 1.2 below. The concentrations measured were between 0.6 µg m^{-3} and 2.2 µg m^{-3}. Background concentrations at Bleak House and Catalan Bay Road were 0.9 µg m^{-3} and 0.6 µg m^{-3} respectively. Highest levels continue to be measured at the Sundial Roundabout Road (2.2 µg m^{-3}) and at the very busy Glacis Road (2 µg m^{-3}).

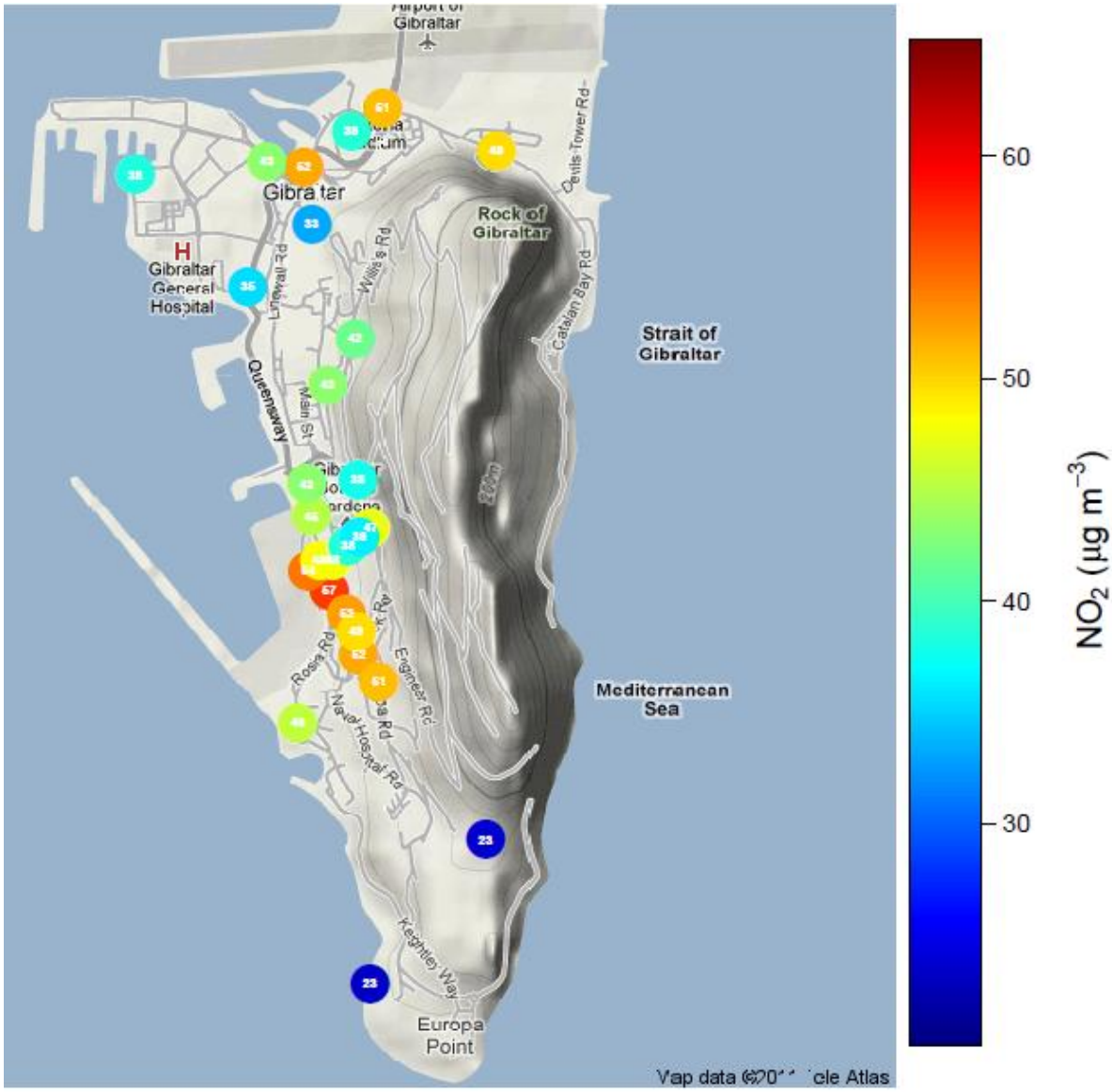
Figure 1.2 Annual mean benzene levels



- No sites had annual mean benzene concentrations greater than the EC Limit Value or Gibraltar Air Quality Objective of 5 µg m^{-3} in 2010.
- The highest levels of benzene were measured at the Sundial Roundabout, at the junction of two of Gibraltar's busiest roads
- The highest annual mean benzene concentration was 2.2 µg m^{-3} measured at the Sundial Roundabout followed by 2 µg m^{-3} measured at Glacis Road. At all other sites the annual mean benzene concentration was 1.9 µg m^{-3} or less.
- Overall, results from the non-automatic network survey in 2010 are consistent with those obtained during the 2005-2009 surveys.

1.6.2 Nitrogen Dioxide Network

Figure 1.3 - NO_2 annual average concentrations for 2010



Annual mean NO_2 concentrations for 2010 range from 42 µg m^{-3} to 64 µg m^{-3} at kerbside sites, 41 µg m^{-3} to 60 µg m^{-3} at roadside sites and 25 µg m^{-3} to 41 µg m^{-3} at background sites.

The highest annual mean concentrations (64 µg m^{-3}) were measured at Jumper's (on Rosia Road) followed by Witham's Road at 61 µg m^{-3}. As can be seen below, other sites geographically close to these also exhibited elevated concentrations of NO_2.

Table 1.14: Annual Mean NO_2 Concentrations in Gibraltar 2010

Code	Site	Conc. (µg m^{-3})
GIB3	Jumpers	56.6
GIB31	Dockyard Road	53.9
GIB25	Churchill House	52.1
GIB10	South Barracks Road	52
GIB5	Glacis Road	51.8
GIB20	Sundial Roundabout	50.8
GIB32	Woodford Cottage	50.8
GIB4	Devils Tower Road	49.4
GIB24	Upper Witham's Entrance	49.4
GIB30	Governors Meadow House	48.4
GIB8	Red Sands Road	47.8
GIB28	Rock Hotel	47.1
GIB21	Anchorage Rosia Road	45.5
GIB22	Rosia Promenade	45.1
GIB12	Water Gardens	43.4
GIB14	Prince Edwards Road	43.1
GIB1	Rosia Road	43
GIB9	Lime Kiln Road	41.9
GIB13	George Don House	38.8
GIB26	Alameda Gardens Theatre	38.5
GIB7	Harbour Views	38
GIB29	Gardiners Road	37.9
GIB27	Alameda Gardens Access Road	36.3
GIB6	Queensway	35.5
GIB11	Main Street	33.1
GIB23	Lathbury Industrial Park	23.4
GIB2	Bleak House	23.1

Background concentrations across Gibraltar seem to vary between the northern built up area, the Jumper's area at the Alameda Gardens and the less built-up area in the southern part of Gibraltar. The NO_2 levels of around 38µg m^{-3} (Harbour Views) and 33.1µg m^{-3} (Main St) were measured at background locations in the north, while concentrations in the south were considerably lower (23.1-23.4µg m^{-3} at Lathbury Industrial Park and Bleak House). Levels at both sites within the Alameda Gardens were 36.3 and 38.5 µg m^{-3}.

The number of sites which were greater than, or equal to, the EU annual mean Limit Value of 40µg m^{-3} for NO_2 concentrations in 2010 was slightly down when compared with 2009, i.e. 18 sites in 2010 versus 21 sites in 2009.

1.7 Air Quality Action Plan 2010

The air quality legislation allows Member States to apply for time extensions where, in a given zone or agglomeration, conformity with the limit values cannot be achieved by the given deadlines. Gibraltar exceeded the target values for both PM_{10} and NO_2 in previous years (2007 & 2008). As a result, it has submitted Time Extension Notifications (TEN) for each of these pollutants. This would enable us to postpone those deadlines by a maximum of five years, in the case of PM_{10} to July 2011 and for NO_2 to July 2015, on condition that an air quality plan be established for the zone or agglomeration to which the postponement would apply.

Accordingly, an Air Quality Action Plan has been produced, comprising of actions and measures intended to reduce levels of PM_{10} and NO_2 in Gibraltar. Once the proposed actions are carried out, it is believed that the measured concentrations of both pollutants will be well below the EU limit values.

Some of the principal actions included within the plan are:

- The control of dust from unmade lands
- The control of re-suspended particulate matter from roads
- The control of dust emissions from demolition and construction
- The expansion of the air monitoring programme to include analysis for sea salt

It also includes the implementation of the Government's existing traffic management plan and the building of a new power station to replace the existing ones.

This is an active document that is subject to review. The Action Plan and the accompanying evidence base for the TEN applications can be found on the Government website at: http://www.gibraltar.gov.gi/time-extension-notifications.

1.8 Conclusions & Recommendations

The Ratified Data for the automatic air pollution monitoring network shows that there were no exceedences of the carbon monoxide, sulphur dioxide, ozone and benzene objectives contained in our national legislation or within the European Air Quality Directives or Daughter Directives.

Nitrogen dioxide exceeded the annual mean objective of 40 µg m^{-3} at both Witham's Road and Rosia Road. The annual mean at Rosia Road automatic monitoring station was 48 µg m^{-3}, unchanged from 2009. The annual mean for 2010 was therefore exceeded at this monitoring station. The annual mean at Witham's Road monitoring station was 55 µg m^{-3} slightly down on 2009, but still above the limit value. The Government of Gibraltar commissioned UK consultants AEA Energy & Environment to prepare a Time Extension Notification (TEN) to the EU Commission in respect of our nitrogen dioxide exceedences of the limit value plus MOT in 2008. The NO_2 TEN application has been submitted and the Government is presently awaiting a reply from the Commission. Data provided by the nitrogen dioxide diffusion tube network in the south district, especially around the Jumpers area, and the new monitoring station at Witham's Road confirm that elevated nitrogen dioxide levels are the result of emissions from the OESCO power station and the Inter Services Generating Station. Modelling carried out in the past also confirmed that these elevated levels are attributable to these power stations. It is expected that the closure of these stations in the near future will result in lower levels in compliance with the Directive. The closure of these two stations and the building of a modern and cleaner power station formed the basis of our TEN application.

Although Gibraltar did not exceed the particulate matter (PM_{10}) annual mean in 2010, we breached our national and European Limit Value for the 24 hour mean which must not be exceeded more than 35 times in the year. Even following apportionment of PM_{10} exceedences resulting from natural transboundary PM_{10} (ie Saharan dust), our figures still do not comply. Unfortunately there could be no correction applied for the other natural component, suspended sea salt particles in the air, as there was insufficient data gathered. The EU commission has refused Gibraltar's PM_{10} TEN application on the basis that we complied with the limit values in 2009 and we now await what action the Commission will

take following the submission of our 2010 data. Further information on Gibraltar's Time Extension Notifications is available on: - www.gibraltar.gov.gi/time-extension-notifications

The ratified data also showed that there were no exceedences of Lead, Cadmium, Arsenic, Nickel and Poly Aromatic Hydrocarbons.

Chapter 2:

Natural Resources

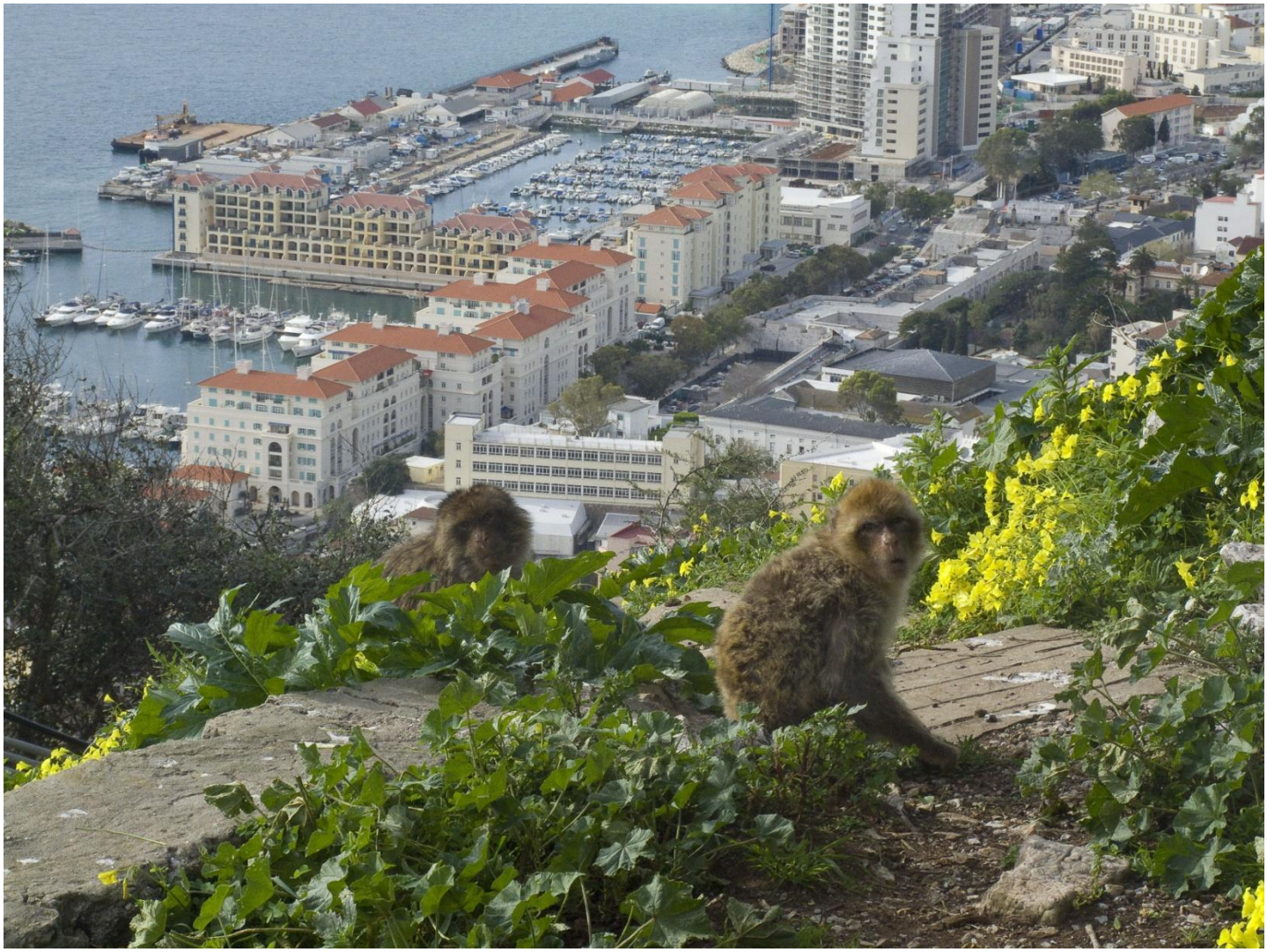


Photo credit: James Carmichael

2.1 Bathing Water

Water is a precious natural resource, which we have to protect and manage with care. The EU's efforts to ensure clean bathing waters date back to the 1970's. The now familiar and successful 1976 Bathing Water Directive will be replaced systematically by the 2006 new Bathing Water Directive until it is repealed in its entirety in 2014.

Bathing water can be, as in Gibraltar's case, coastal waters (beaches) but they also include rivers and lakes. The new Bathing Water Directive which was transposed into local legislation by the Environment (Quality of Bathing Water) Regulations 2009 deals with:-

- Monitoring, assessment and classification of bathing water quality. This classification is divided into excellent, good, sufficient and poor quality and all of these are linked to clear numerical quality standards based on bacteriological parameters. These classifications have to be in place by the end of the 2015 bathing season
- Bathing water profiles that describe the bathing waters and explain the potential impacts and threats to water quality. These will provide information about the bathing waters to citizens and will serve as a management tool for authorities managing those waters. The first profiles have to be compiled by March 2011.
- Measures that have to be taken in exceptional circumstances that impact bathing water quality including information to the public.
- Checks and information on various pollutants that affect bathing water quality.
- Cooperation in the management of water shared between different Member States.

Gibraltar has six bathing areas, Camp Bay, Catalan Bay, Eastern Beach, Little Bay, Sandy Bay and Western Beach. These areas are monitored on a minimum of a weekly basis during 15th April to 30th October each year. The EU minimum monitoring requirement is for fortnightly samples but as highlighted above, Gibraltar is sampling more often than this requirement.

The Gibraltar beaches have always met the Mandatory Values and some of them have met the more stringent Guide Values consistently each year. This year the bathing water in Western Beach suffered deterioration and failed to meet the Mandatory Values on several occasions. This was attributed to discharges from a recently built storm water drain by the municipal authorities in Spain to service La Linea. This Spanish drain acts as a combined sewage/storm water overflow which discharges into the Western Beach basin.

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	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
1. Camp Bay											
2. Catalan Bay											
3. Eastern Beach											
4. Little Bay											
5.Sandy Bay											
6.Western Beach											

 Meets Guide Values set by National legislation and EEC Directive 76/160/EEC

 Meets Mandatory Values set by National legislation and EEC Directive 76/160/EEC

 Fails Mandatory Values set by National legislation and EEC Directive 76/160/EEC

The annual Bathing Water Report and Tourist Atlas for all EU bathing water can be viewed at http://ec.europa.eu/water/water-bathing/index_en.html. Further information on bathing waters can be found at Water Information System for Europe (WISE) http://www.eea.europa.eu/themes/water.

2.2 Potable water Supply

AquaGib produces all of its potable water through desalination. Potable water is produced at two separate locations within Gibraltar, one plant is located at Governor's Cottage, which consists of four Reverse Osmosis Desalination Plants capable of a maximum production of 4,400 cm^3/day, and the other is located at Waterport and consists of two Multistage Flash Distillers capable of a maximum production of 3700 cm^3/day.

The Public Health Act Part III is the main piece of legislation that controls the supply and quality of potable water in Gibraltar. The Schedules of the Public Health (Potable Water) Rules 1994 contain the microbiological and chemical parameters to which potable water must adhere.

Water quality is checked under a two tier sampling and analysis programme carried out throughout the year by both the Environmental Agency and Aquagib Ltd.

(a) The Environmental Agency carries out its own independent monitoring programme taking samples at consumers' taps. This programme is designed to meet the sampling criteria outlined in Directive 98/83/EC and our national legislation.

(b) AquaGib Ltd has its own "in house" water quality programme and also sends samples to laboratories in the United Kingdom. Samples are taken throughout the production, storage, service reservoirs and at control points and consumer taps.

In 2010, AquaGib Ltd produced and supplied a total of 1,462,269 m^3 of potable water, the majority being produced by the Reverse Osmosis Plants at Governor's Cottage. "Check" and "Audit" monitoring were carried out in accordance with EC 98/83/EC and the Public Health (Potable Water) Rules 1994.

The purpose of the "check" monitoring is –

- To provide information on the organoleptic and microbiological quality of the water.
- To test the effectiveness of the water treatment.
- To check whether the water complies with the relevant parametric values laid down by the Directive and our national legislation.

The following parameters are included in the "check" monitoring carried out by the Environmental Agency:-

- Odour
- Taste
- Colour
- Turbidity
- pH
- conductivity
- Ammonium
- Hardness
- Chloride
- Residual Chlorine
- Total Coliforms
- Faecal Coliforms

The Rules and Directive require that a minimum of 16 samples and a further 3 audit samples are undertaken in a given year taking into consideration the total volume of water produced. The Environmental Agency and Aquagib Ltd jointly took a total of 251 "check" and 7 "audit" samples were taken during 2010.

The following table shows the number of samples taken in Gibraltar:-

Table 2.1 National summary information on drinking water quality in water supply zones exceeding 1000 m^3 per day as an average or serving more than 5000 persons

Member State	United Kingdom (Gibraltar)		
Year	2010		
Parameter[1]	**Number of Analyses**	**Numbers of Analyses not Complying**	**% of Analyses Complying**
Microbiological Parameters			
Escherichia coli (E.coli)	245	0	100
Enterococci	15	0	100
Chemical Parameters			
Aluminium	7	0	100
Antimony	7	0	100
Arsenic	7	0	100
Benzene	7	0	100
Benzo(a)pyrene	7	0	100
Boron	7	0	100
Bromate	7	0	100
Cadmium	7	0	100
Chromium	7	0	100
Colour[3]	258	0	100
Copper	7	0	100
Cyanide	7	0	100
1,2-dichloroethane	7	0	100
Fluoride	7	0	100
Iron	7	1	85.7
Lead	7	0	100
Manganese	7	0	100
Mercury	7	0	100
Nickel	7	0	100
Nitrate	7	0	100
Nitrite in distribution at the tap	7	0	100
Nitrate/nitrite formula4	7	0	100

Odour[3]	252	0	100
Pesticides-individual [2]	0	0	100
Pesticides – Total	103	0	100
Polycyclic Aromatic Hydrocarbons	42	0	100
Selenium	7	0	100
Sodium	7	0	100
Taste[3]	252	0	100
Tetrachloroethene and Trichloroethene	14	0	100
Trihalomethanes – Total	7	0	100

		Indicator	**Parameters**
Ammonium	252	0	100
Chloride	252	0	100
Clostridium perfringens	15	0	100
Conductivity	252	0	100
Hydrogen Ion Concentration	252	0	100
Sulphate	7	0	100
Colony count 220C[3]	15	0	100

(1) See table 2.1 for the product specified parameters Acrylamide, Epichlorohydrin and Vinylchloride
(2) Only individual pesticides, which have been detected above the detection limit, should be reported
(3) In the accompanying Guidance Notes an explanation is given on the parameters colour, odour, taste, Colony Count 22°C, TOC, and turbidity.
(4) DWD Annex 1 Part B Note

2.3 Coastal water sampling

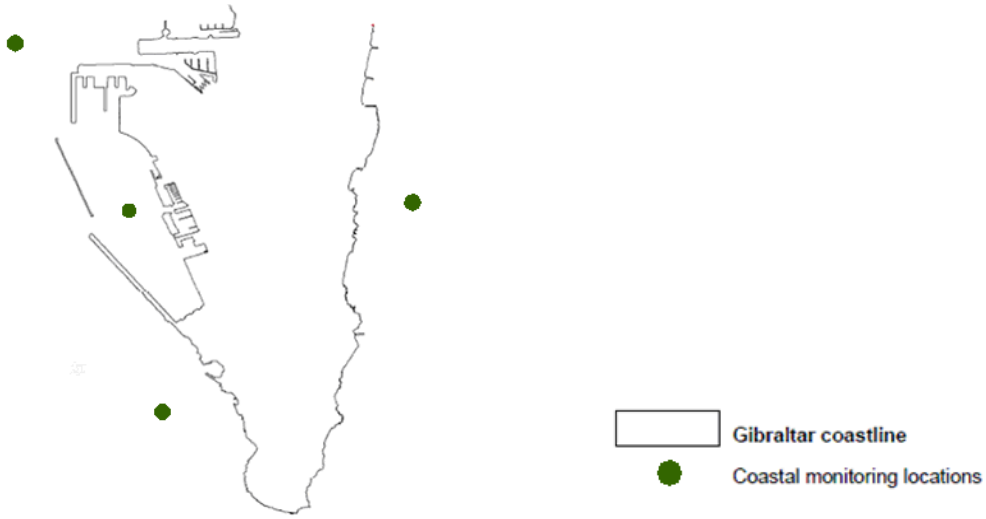
In order to comply with the Water Framework Directive (WFD) 2000/60/EC requirements, good chemical and ecological status should be maintained or attained in Gibraltar coastal and ground waters by 2015. As part of the assessment of water quality status, the Department of the Environment has been undertaking chemical water quality and phytoplankton analysis in its coastal waters since July 2009. Ground water monitoring has

also been carried out by Aquagib under contract to the Department of the Environment. This section of the annual report provides an overview of the data collected so far.

2.3.1 Coastal water monitoring programme

Sea water samples were collected for water quality analysis of the coastal waters of Gibraltar (within 500m of the shoreline) using the motor vessel *Texas* anchored at each location. Four sampling sites were chosen around the coast of Gibraltar and these are shown in Figure 2.1.

Figure 2.1 Coastal water sampling locations



Monthly water quality monitoring was undertaken for nutrient levels, chlorophyll-a and suspended solids. Quarterly water quality monitoring was undertaken for priority substances and specific pollutants. Phytoplankton identification was also undertaken during the quarterly monitoring surveys to assist the assessment of the state of our coastal waters.

The results will be assessed fully in the process of developing the first River Basin Management Plan (RBMP) but initial examination of the data collected for chemical, physico-chemical and biological parameters indicates the following interim conclusions:

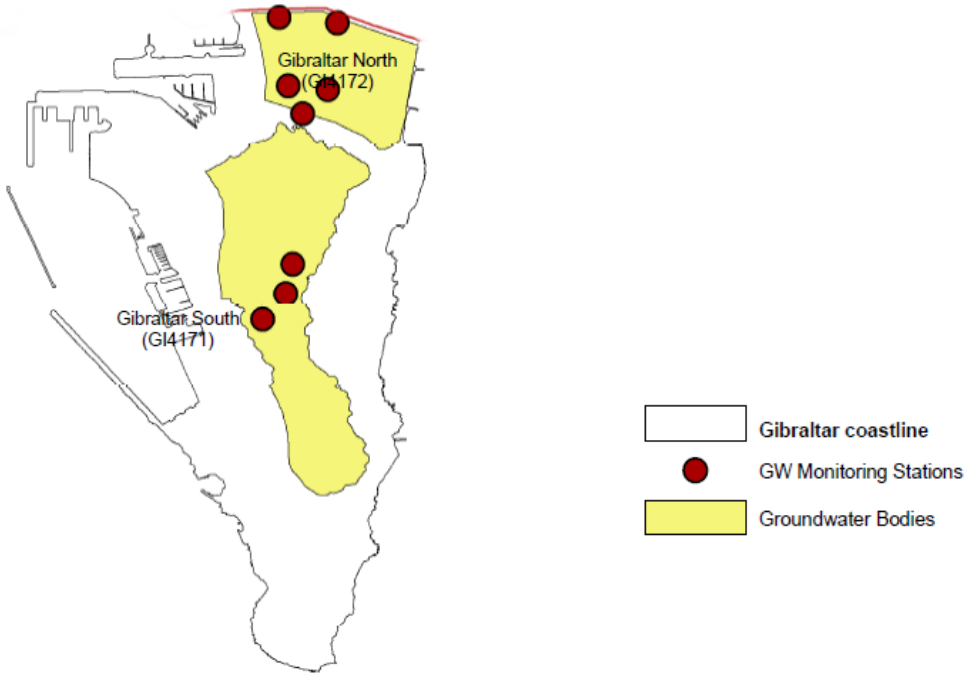
- Dissolved oxygen concentrations correspond with high status.
- Inorganic nitrogen concentrations correspond with high status suggesting that there are no significant adverse impacts from nutrients.

- No pesticides or herbicides were detected at any of the sampling points and levels of hydrocarbons were all below the required Environmental Quality Standards (EQS).
- For chromium, one result, in October 2009, gave a concentration of chromium of 10.1µg/l. EQS are established only for chromium in oxidation state (chromium VI) rather than total chromium. Nevertheless, the measured value of 10.1µg/l did not exceed the short term EQS of 32µg/l for chromium VI. Chromium concentrations were below the laboratory detection limit for all samples from all other sites. Thus, the high value appears to be an isolated occurrence, most probably due to the presence of particle containing chromium originating from corrosion on one of the many vessels anchored offshore.
- Initial examination of chlorophyll-a data indicate that the 90%ile values for the sites within the wider coastal water body are close to the EQS of 3.6µg/l for Type II A waters (western Mediterranean basin influenced by freshwater). Algal communities were similar at all sites. Further assessment will be included in the draft RBMP.

2.3.2 Groundwater monitoring programme

An overview of the monitoring locations that form part of the groundwater monitoring programme is provided in Figure 2.2. There are currently 5 monitoring points in the Northern Isthmus aquifer, which is where Gibraltar has historically abstracted a proportion (up to 12%) of its total water supply. There are also 3 monitoring points in the Southern bedrock aquifer. This aquifer is recharged by rainfall percolating through the limestone bedrock as opposed to the Northern aquifer, which is predominantly recharged from the Sierra Carbonera district in neighbouring Spain.

Figure 2.2 Monitoring locations in the Northern Isthmus and Southern bedrock aquifers



A wide range of heavy metals, hydrocarbons and pesticides are monitored on a quarterly basis from each of the monitoring points. Additional in situ measurements, including water level (quantitative) measurements, are taken from each monitoring point to aid the water quality classification of Gibraltar's groundwaters. No exceedences in the chemical parameters monitored have been observed so far for the Northern Isthmus or Southern Bedrock aquifers.

2.4 Habitats

The Habitats Directive requires that Member States afford protection for certain species and habitats through the creation of European Sites (Sites of Community Importance (SCI) and Special Areas of Conservation (SAC)).

The proposed new diesel power station lies outside the perimeter of the Rock of Gibraltar SCI, however, due to the characteristics and magnitude of the project, it was deemed that an Appropriate Assessment (AA) for the project needed to be conducted, as stipulated in Section 17BB(1) of the Nature Protection Act 1991 and the Habitats Directive.

The AA process consists of 4 stages:

1. Stage 1 – Screening Process (determining whether an AA is necessary)
2. Stage 2 – Production of the Alternative Assessment

3. Stage 3 – Assessment of alternative solutions

4. Stage 4 – Assessment of compensatory measures

Given that significant effects were deemed likely, the Department moved directly to Stage 2 of the process.

2.4.1 Stage 2: Production of the Alternative Assessment

The AA process required the Department of the Environment to assess whether or not the proposed power station would affect the integrity of the Rock of Gibraltar SCI. If it concluded that the integrity of the site would be affected, then it needed to examine whether appropriate mitigation measures could be designed that would cancel or minimise any potential adverse effects identified.

The AA concluded that residual effects upon the SCI would remain, even after the implementation of mitigation measures. These effects were the change in vegetation caused by air emissions from the power station, disruption of bats moving through the site due to noise and lighting, the loss of the green corridor and finally the effect on birds from the construction and operation of the power station. These impacts in their totality were deemed to affect the integrity of the SCI.

As such, it was necessary to move on to Stage 3 of the process and assess whether or not any alternative solutions were available.

2.4.2 Stage 3: Assessment of Alternative Solutions

The assessment of alternatives examined whether or not there were alternative ways of implementing the power generation project in such a way as to avoid any adverse impacts on the integrity of the Rock of Gibraltar SCI. Before a project or plan that, either alone or in combination with other projects or plans, has adverse effects on a Natura 2000 site(s) can proceed, it must be objectively concluded that no alternative solutions exist.

Examination of all the possible alternative ways of achieving the power generation requirements of Gibraltar with the intention of avoiding any adverse impacts on the integrity of the Rock of Gibraltar SCI, revealed that this was not possible. The alternatives assessed included alternative locations, alternative processes and alternative fuel types. The 'do-nothing' option was also considered. Each alternative was assessed in terms of its feasibility and also its relative impact upon the integrity of the Rock of Gibraltar SCI.

The assessment concluded that there were no viable alternatives, primarily due to the time constraints imposed by EU Air Quality Directives as a direct result of the public health issues

affecting residential areas in Gibraltar, in particular, in the South. In order to meet EU Directive target limit values on air quality for nitrogen dioxide (NO_2) and particulate matter (PM_{10}), the three existing power stations needed to be decommissioned. It was therefore necessary to proceed onto Stage 4 of the assessment process, which involved assessment of compensatory measures in the light of a situation where no alternative solutions exist and where adverse impacts remain and the project is authorised for Imperative Reasons of Overriding Public Interest (IROPI).

2.4.3 Stage 4: Assessment of Compensatory Measures

A compensatory measures committee was established, made up of local scientists, ecologists and engineers. The committee considered the possible impacts that the proposed development could have on the SCI and these were identified as:

(i) Loss of connectivity between biological components of the SCI; and

(ii) Effect of pollution from the power station on surrounding vegetation.

Compensatory measures were then proposed to cover each of these points effectively and realistically. The following measures were identified:

(i) Sustaining the connectivity between Windmill Hill Flats and the Upper Rock Nature Reserve by providing protection for peripheral habitats that connect the two sites;

(ii) Increasing the extent of listed habitats that are protected in Gibraltar, in particular cliff habitats;

(iii) Targeted management of habitats in the SCI to ensure that populations of species affected by lack of connectivity remain sustainable; and

(iv) Establishing a baseline and subsequent monitoring of the effect of emissions produced by the proposed power station on the surrounding vegetation.

The compensatory measures identified are considered appropriate as they help to achieve the conservation objectives of the Rock of Gibraltar SCI, namely to ensure that the status of European features pertaining to the SCI are maintained in a favourable condition, allowing for natural change. The effectiveness of the compensatory measures will be assessed once the power station is built and operational, however they will be implemented prior to the commencement of any works onsite.

Chapter 3:

Waste Management

Photo credit: Maurice Hook

3.1 Background

Waste management remains a priority within Gibraltar due to increasing pressures from the EU for all member states to deal with their waste on the principles of proximity and self sufficiency.

This chapter provides statistical information on Gibraltar's waste arisings as well as details of waste management policies currently in place, including details on the increased recycling facilities and the introduction of waste electrical and electronic equipment legislation (WEEE).

3.2 Industrial Waste

Due to the absence of heavy industry in Gibraltar, the main sources of industrial waste are shipping, the Ministry of Defence (MOD), light industry and clinical/medical practices. A limited amount of hazardous material is also produced from municipal sources and via construction and demolition activities.

Industrial waste materials are stored locally until sufficient quantities have been amassed to warrant its transfrontier shipment. It predominantly consists of waste oils, asbestos and asbestos containing products. A detailed breakdown of locally produced hazardous wastes is given in Table 3.1

Table 3.1 Breakdown of Industrial Waste Arisings 2010

EUROPEAN WASTE CODE	DESCRIPTION	YEAR TOTAL
06 01 06*	other acids	4938 Kgs
07 02 13	waste plastic	0.22 Ton
08 01 11*	waste paint and varnish containing organic solvents or other dangerous substances	45487 Kgs
08 03 17*	waste printing toner containing dangerous substances	320 Kgs
09 01 02*	water-based offset plate developer solutions	3076 Kgs
12 01 16*	waste blasting material containing dangerous substances	3419542 Kgs
13 02 05*	mineral-based non-chlorinated engine, gear and lubricating oils	11.08 MT
13 04 01*, 13 04 02*, 13 04 03*	bilge oils from inland navigation, bilge oils from jetty sewers, bilge oils from other navigation	4225 M^3

13 05 02*	sludges from oil/water separators	2140 Kgs
14 06 03*	other solvents and solvent mixtures	627 Kgs
15 02 02*	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	29637 Kgs
16 01 07*	oil filters	5683 Kgs
16 02 11*	discarded equipment containing chlorofluorocarbons, HCFC, HFC	81960 Kgs
16 02 13*	discarded equipment containing hazardous components (16) other than those mentioned in 16 02 09 to 16 02 12	189300 Kgs
16 05 04*	gases in pressure containers (including halons) containing dangerous substances	713
16 06 01*	lead batteries	108475Kgs
16 07 08*	wastes containing oil	30.365 Ton
17 03 03*	coal tar and tarred products	3800 Kgs
17 05 03*	soil and stones containing dangerous substances	8423157 Kgs
17 06 05*	construction materials containing asbestos	63435 Kgs
17 09 03*	other construction and demolition wastes (including mixed wastes) containing dangerous substances	2130300 Kgs
17 09 04	mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 0902 and 17 09 03	65961.43 MT
18 01 03*	wastes whose collection and disposal is subject to special requirements in order to prevent infection	460080 Ltrs
19 01 11*	bottom ash and slag containing dangerous substances	12400 Kgs
19 01 13*	fly ash containing dangerous substances	4160 Kgs
20 01 21*	fluorescent tubes and other mercury-containing waste	300 Kgs
20 01 29*	detergents containing dangerous substances	1720 Kgs
20 01 35*	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	10640 Kgs
20 03 01	mixed municipal waste	28430085 Kgs

Note ***** Denotes hazardous waste

3.3 Municipal Waste

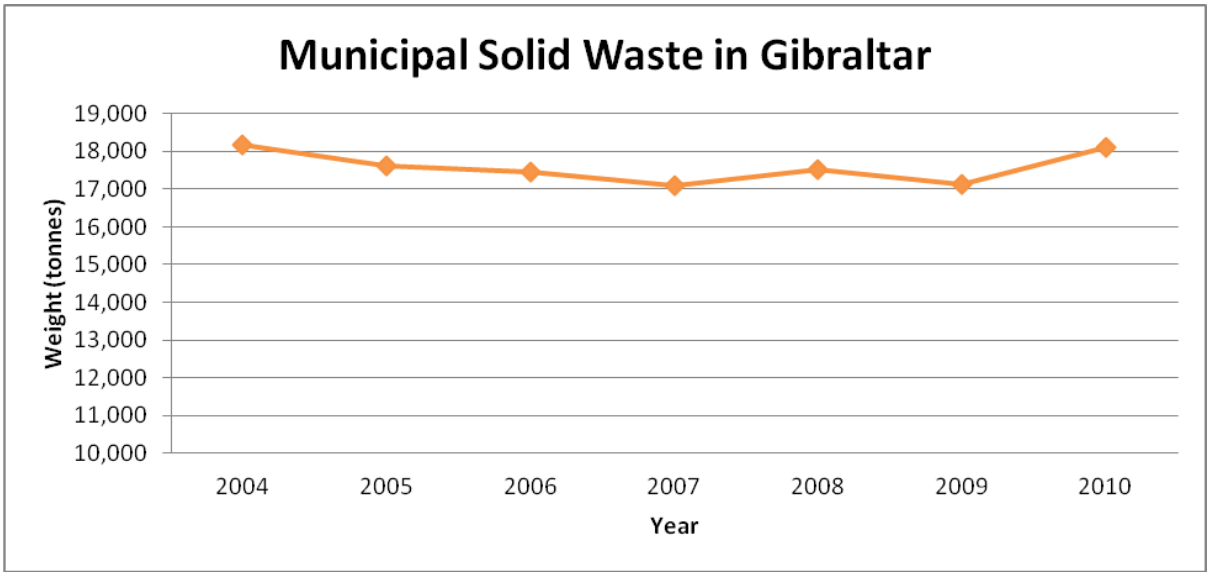
Municipal waste in Gibraltar is collected by Gibraltar Industrial Cleaners (GIC), a wholly owned Government company, and Master Service (Gib) Ltd, a private company.

In 2010, the total amount of municipal waste collected and sent to Spain for disposal was 28690 tonnes. This includes mattresses and bulky household items as illustrated in Table 3.2. Removing these items from the total leaves 18111 tonnes of household waste, equating to 615 kg per person. Household waste generation has seen a sharp increase from last year. Figure 3.1 shows that the steady decrease from 2006-2008 has changed with the 2010 total being the highest it has been for the past five years.

Table 3.2 Municipal waste in Gibraltar in 2010

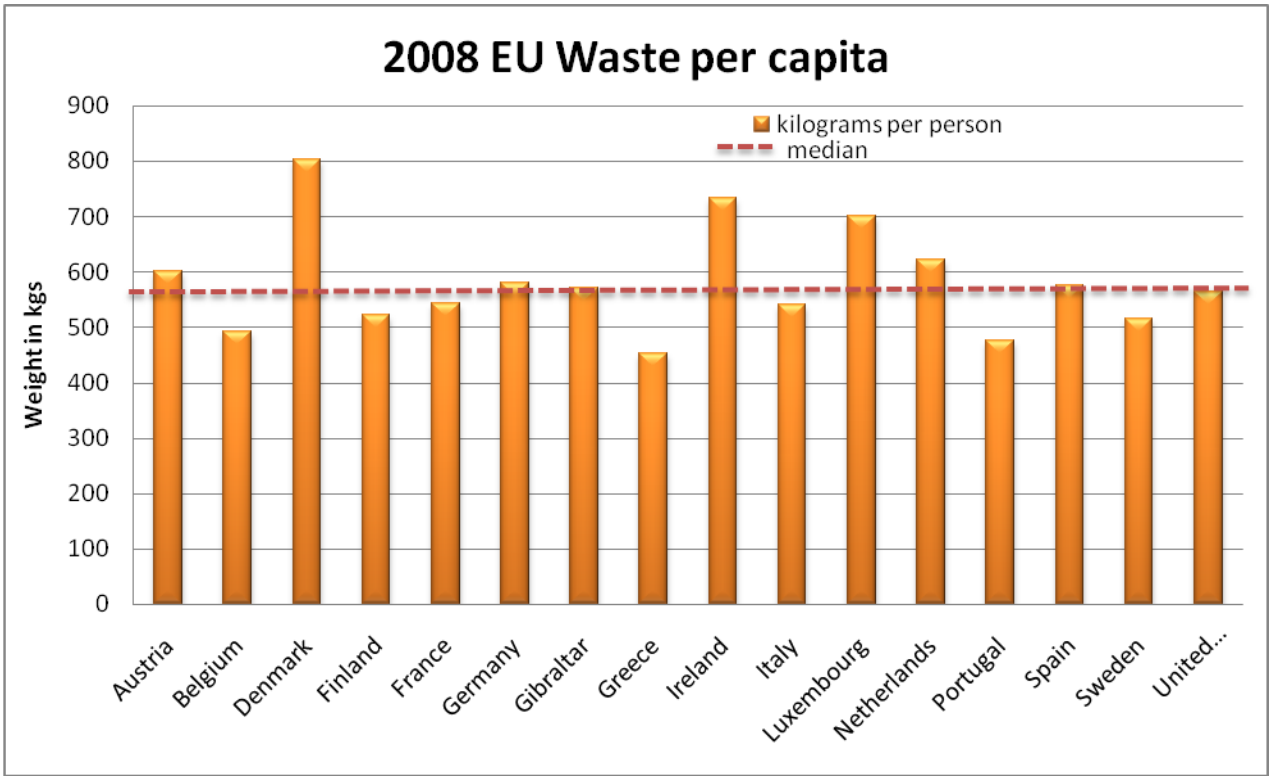
	Bulky Items	Refuse	Mattresses
	Weight (tonnes)	Weight (tonnes)	Weight (tonnes)
JANUARY 10	727	1921	0
FEBRUARY 10	969	1595	0
MARCH 10	1033	1647	3.3
APRIL 10	869	1353	0.8
MAY 10	720	1283	1.6
JUNE 10	916	1504	0.7
JULY 10	760	1355	2.1
AUGUST 10	788	1405	0
SEPTEMBER 10	907	1526	1.7
OCTOBER 10	1046	1423	2.4
NOVEMBER 10	1015	1474	2.5
DECEMBER 10	830	1626	0.9
YEARLY TOTAL	**10579**	**18111**	**16**

Figure 3.1 Household Waste in Gibraltar



One of the targets set in the EU 5th Environment Action Programme (EAP) was to reduce the generation of municipal waste, per capita, per year, to the average 1985 EU level of 300 kg by the year 2000, and then stabilise it at that level. Data received from EU countries shows that the target was far from ever being reached. The average amount of municipal waste generated per capita per year in many western European countries still exceeds 550kg. Furthermore, there are notable differences among countries both in the development of waste generation and in its size. The annual generation per capita varies from 306 kg in Czech Republic to 453 kg in Greece and up to 802 kg in Denmark. Figure 3.2 compares Gibraltar to other EU countries.

Figure 3.2 Comparison of waste produced per person between EU countries



3.4 Recycling

3.4.1 Glass & Cans

Recycling rates for glass and cans increased slightly from 2009. The figures are as follows:

Table 3.3 Recycling figures for glass and cans.

	2009	2010
% of cans recycled	1.60%	2.80%
% of glass recycled	10.22%	12.10%

These figures fall very short of our recycling targets of 50% by 2020. Without a serious commitment from local residents, we will not meet our recycling targets and Gibraltar will not become a recycling community. The new recycling bin locations are:

Table 3.4 Recycling points in Gibraltar

Recycling points	Type of bins available
North District	
Gibraltar Airport Service Area	Glass/Cans
Glacis Estate - Archbishop Amigo House north	Glass/Cans/Household Batteries
Glacis Estate - Constitution House north	Glass/Cans
Bayside Rd - teachers' car park entrance	Glass/Cans/Household Batteries
Ocean Village	Glass/Cans
Mons Calpe Road - Coach Park Entrance	Glass/Cans/Household Batteries
North East District	
Laguna Estate - by refuse cubicle Ballymena House	Glass/Cans
Laguna Estate/Devil's Tower Rd - by refuse cubicle Ark Royal Hse	Glass/Cans/Household Batteries
Cemetery Road - by roundabout	Glass/Cans
East District	
Eastern Beach Road - 2 locations	Glass/Cans
Sir Herbert Miles Road - bus stop by William's Way Refuse Cubicle	Glass/Cans/Household Batteries
Sir Herbert Miles Road - Black Strap Cove layby	Glass/Cans/Household Batteries
South District	
Little Bay - promenade entrance	Glass/Cans
Camp Bay promenade	Glass/Cans
Rosia Road - by Rosia Battery	Glass/Cans
Rosia Road - by bus stop RGP HQ New Mole House	Glass/Cans/Household Batteries
Cumberland Road - by refuse enclosure (North)	Glass/Cans
Naval Hospital Road within refuse enclosure south	Glass/Cans
Europa Road - by bus stop Garrison	Glass/Cans

Gym	
Europa Road - behind bus stop ex-Casino lift	Glass/Cans/Household Batteries
Europa Road - lookout at top of path leading to Heathfield House, Witham's Road	Glass/Cans
South West District	
Witham's Road - between Jumper's Building and St John's Court	Glass/Cans
Red Sands Road - by Governor's Meadow House	Glass/Cans
Red Sands Road - Grand Parade entrance	Glass/Cans
Rosia Road - footpath by Saluting Battery Promenade (north)	Glass/Cans/Household Batteries
West	
Queensway - Commonwealth Car Park	Glass/Cans
Reclamation Road - Leisure Centre	Glass/Cans
North West	
Edinburgh Estate - 2 locations (north and south)	Glass/Cans
Queensway - Westside School entrance	Glass/Cans
Varyl Begg Estate - St Paul's School entrance	Glass/Cans
Varyl Begg Estate - car park by Royal Sovereign House	Glass/Cans
Harbour Views Estate	Glass/Cans/Household Batteries
Europort Avenue - by entrance to rowing clubs	Glass/Cans/Household Batteries
Fish Market Road - by refuse cubicle	Glass/Cans/Household Batteries
Opposite St Bernard's Hospital entrance	Glass/Cans/Household Batteries
Harbour Views Road - parking by Bishop Fitzgerald School	Glass/Cans/Household Batteries
Devil's Tongue/Waterport Road junction footpath	Glass/Cans/Household Batteries
Within City Wall	
Grand Casemates - Service Area	Glass/Cans
Cloister Ramp	Glass/Cans/Household Batteries
Line Wall Road – opposite Irish Place	Glass/Household Batteries

3.4.2 Waste Electrical & Electronic Equipment (WEEE)

The WEEE Directive has been transposed into local law via the Environment (Waste) Regulations 2007 (WEEE Regulations). This legislation looks to minimise the environmental impacts of electrical and electronic equipment (EEE) when it reaches the end of its useful life. Systems need to be set up to facilitate and encourage the separate collection, subsequent treatment, re-use, recycling and ultimately environmentally sound disposal of WEEE.

These regulations have significant implications for importers, producers, retailers and end-users of EEE as well as those who treat or recover WEEE.

Importers of EEE now need to declare how much EEE they are importing into Gibraltar, the relevant forms can be downloaded from the Department of the Environment website. Retailers and users of EEE need to ensure that items are disposed of correctly by being taken to the temporary WEEE park at the Europa Advance Road facility. Please be aware that electrical and electronic equipment cannot be disposed of with household waste. When supplying a new product, retailers must offer a free take back in store to enable purchasers to return their WEEE when making a like for like purchase.

Detailed guidance on the WEEE regulations and their implications for you can be downloaded from the Department of the Environment website www.gibraltar.gov.gi/environment/environment.

Table 3.5 Quantities of WEE imported, collected, treated and recovered in 2010

	Imported		Collected	Sent for treatment	Recovery
Categories	*Quantity*	*Weight (tonnes)*	*Quantity*	*Weight (tonnes)*	*%*
Large Household appliances	6246	125.46	2699	183.69	43
Small Household appliances	16077	173.63	17	0.1	0
IT and Telecommunications Equipment	59266	135.43	728	14.72	1
Consumer Equipment	12820	39.47	336	6.84	3
Lighting Equipment	31134	44.72	239	0	1
Gas discharge lamps	0	0.00	0	0	0
Electrical and Electronic tools	16217	33.30	0	0	0
Toys, Leisure and Sports Equipment	12087	91.53	0	0	0
Medical Devices	11644	14.35	0	0	0
Monitoring and Control Equipment	8439	7.36	0	0	0
Automatic Dispensers	53	0.37	11	0	21

Locally produced WEEE is collected and taken to an authorised facility in Spain.

3.4.3 Batteries

In 2010, measures were introduced to establish a scheme aiming at a high level of collection and recycling of batteries with quantified collection and recycling targets.

Table 3.6 Battery recycling figures

2010	Quantity (kilos)
Imported	24815
Collected	15699
Recovery %	63

This scheme includes the collection of data regarding all local battery imports. Battery recycling bins were placed throughout Gibraltar and their locations are listed in Table 3.3.

3.4.4 Other waste materials

The recycling of other waste materials continues. Recyclable material from our municipal waste is manually and automatically separated and processed at the Los Barrios landfill site, Sur Europa. In addition to this, wood and metal items are sorted at the previous incinerator site at Michael Dobinson Way. A separate Civic Amenities Site is operated by Gibraltar General Support Services Ltd, located at Europa Advance Road. At this site, the public can also dispose of their bulky timber items, paint, white goods and other electrical items (see above), mattresses, building debris and metal scrap.

3.5 Clinical Waste

The Clinical Waste Incinerator is located at Governor's Cottage, Europa Advance Road. This facility provides the collection, transport and incineration services to all local clinical and medical waste producers (hospitals, laboratories, surgeries, medical, dental and veterinary clinics).

47043 sixty litre containers of clinical waste were incinerated locally in 2010.

Chapter 4:

Energy

4.1 Background

Gibraltar continues to strive to improve its energy efficiency throughout all sectors, as the most effective way to cut down our carbon footprint. Efforts are concentrated on the building sector as well as on plans to introduce renewable energy locally.

4.2 Energy Performance of Buildings

This legislation was introduced late in 2009 and a seminar was held at the O'Callaghan Elliot Hotel in February of 2010 in order to familiarise relevant actors with its provisions. Representatives from the construction industry, lawyers, estate agents and developers were all invited to attend the seminar, which outlined each sectors' obligations under the Regulation. Dr. Paul Davidson of the Building Research Establishment (BRE) also addressed the seminar, giving a short presentation on the Simplified Building Energy Model (SBEM-GI) which is used to calculate the energy performance of a building.

Since the legislation was introduced, a total of 269 properties have been issued with Energy Performance Certificates.

It is a legal requirement to obtain an Energy Performance Certificate for a building with fixed heating, cooling or mechanical ventilation, upon construction and prior to sale or rental. Failure to do so constitutes an offence and carries a fixed penalty fee.

4.3 Renewable Energy

The EU has issued a new Directive on the Promotion of Use of Energy from Renewable Sources (2009/28/EC). This Directive repeals previous directives on this issue. It establishes a common framework for the promotion of energy from renewable sources and sets mandatory targets for the overall share of the renewable energy sources in energy production and transport sectors. The effort to achieve the goal of 20% of energy from renewables by 2020 is divided among Member States. The UK's established target is 15% by 2020. The Government of Gibraltar has therefore revised its previous target of 10% of renewable energy by 2012 to reflect these new commitments. Our renewable energy targets are now for an overall share of 15% of our energy from renewables by 2020. The most favourable options for obtaining this share of energy remain offshore wind, energy from waste and solar.

The Directive will shortly be transposed into local legislation.

4.4 Provision of New Power Station

The Department of the Environment completed the AA process (see Chapter 2) for the proposed new power station, to be built at Lathbury Barracks. The new generating station will be powered by diesel engines, which have the capability to run on biofuels.

The proposed new power station is required to provide for a maximum system demand of 42 MW of electricity initially in 2012, with a future forecast peak demand of approximately 72 MW by 2032. In order to meet this demand whilst allowing for planned and unplanned generator outages, the new power station will have an installed capacity in the region of 59 to 64 MW in 2012 and approximately 84 to 88 MW in 2032.

The new power station will be based on the use of diesel engines each with a generating output of 6.5 to 8 MW. Sufficient number of engines will be provided such that the firm capacity (allowing for maintenance) will cover the 2012 worst-case peak demand of 45 MW. Further engines will be installed over a number of years depending upon demand, however, it is anticipated that a further three engines will be installed between 2012 and 2032.

The new power station will be sited at the ex-MoD Parade Ground of Lathbury Barracks (Lathbury) in an area of approximately 1.9 ha. Several sites were investigated as part of the Study of Options for Power Generation for Gibraltar, a strategic study of alternative potential sites and potential types of power supply. Key issues in choosing Lathbury were: available space, environmental and public health considerations.

The power station will include power plant, fuel service tanks, electrical switchgear, workshops, warehouse and stores, administration building, guardhouse and fencing, site roads, parking and landscaping.

Chapter 5:

Food Hygiene

Photo credit: Grace Torres

5. 1 Food Safety

5.1.1 What is food safety?

Food safety is the absence of any risk of harm arising from the consumption of food. Food safety describes the practice of managing food in such a way that the food is highly unlikely to cause any harmful effects to consumers.

5.1.2 What is food hygiene?

Food hygiene is the practical process that ensures that the food you make, serve or sell is perfectly safe to eat.

5.1.3 What is food poisoning?

Contamination is the term that describes food in which something harmful or objectionable is present. If you consume contaminated food, there is a strong likelihood that you will suffer from food poisoning. Food may be contaminated with physical objects, chemicals or harmful bacteria. Bacteria cause the most common type of food poisoning in Gibraltar and it is referred to as bacterial food poisoning. The most common types of bacterial food poisoning in Gibraltar are caused by bacteria of the Salmonella and Campylobacter groups.

As part of their everyday duties, Environmental Health Officers investigate food poisoning cases once they are reported to the Environmental Agency. The Environmental Health Officer conducts a thorough investigation to trace the source of infection. This normally entails visiting households, interviewing affected persons and offering precautionary advice to prevent the spread of further infection. Any food establishment associated with an outbreak is inspected immediately and a thorough investigation is carried out into the handling, storage, preparation and cooking of any suspect food to identify any malpractice, which may have led to contamination. Food samples and health screening of food handlers may be carried out if deemed necessary.

5.2 Inspection of Food Premises

The Environmental Agency has a Food Team comprising of Environmental Health Officers and Assistant Environmental Health Officers that carry out programmed food hygiene inspection of the 431 food premises in Gibraltar. These premises consist of restaurants, supermarkets, delicatessens, bakeries, groceries and confectionery outlets. These Officers also advise the proprietors and employers of food premises on how to comply with the Food Hygiene Regulations and how to prevent food poisoning. The Environmental Agency works

very closely with developers and proprietors at the design stage of new food premises offering advice in their design and layout so that they comply with the law.

During 2010, 1070 inspections of food premises were carried out.

5.3 Registration of Food Premises

The Food and Drugs Act 1964 requires certain premises in which high risk foods are handled for sale to be registered by Government. Registration is granted subject to the premises complying with the Food Hygiene Regulations.

5.4 Food Sampling

Foods that are prone to give rise to bacterial food poisoning are those in which bacteria can multiply and live. These foods are those that have high protein contents such as cooked meals, meat and poultry products and meals prepared with meat and poultry. These foods, known as high-risk foods, are sampled frequently to ensure that they are free from food poisoning bacteria. Other foods are also sampled to ensure that they comply with compositional standards set down in food additives legislation. A total of 236 samples were taken during 2010.

5.5 Food Alerts

The food team responds to food alerts from both the Food Standards Agency and the Rapid Alert System for Food and Feed of the European Community. These alerts advise Competent Authorities in different EU countries about problems associated with particular foods that have an impact on consumers. Depending on the nature of the alert, the food in question may be withdrawn from sale, surrendered to officers or in extreme cases seized under the provisions of the Food and Drugs Act.

5.6 Imported Food

The vast majority of food consumed locally is imported from countries worldwide via the land frontier with Spain. The Environmental Agency operates an inspection post at the border with Spain and all food imported is subject to inspections as necessary. A small amount of food is imported by shipping and this is also inspected by members of the Environmental Agency. The inspection service is supplemented by a routine and random sampling programme.

5.7 Investigation of Food Complaints and Food Premises

The food team responds to complaints of unacceptable premises, poor practices of food handlers and the state of food. Where a complaint is received concerning a food business, a visit is made as soon as possible and an investigation is undertaken.

5.7.1 Reported Food poisoning cases

Table 5.1 shows the incidence of key laboratory confirmed food borne infections over the past 6 years. It is these cases that the Environmental Health Officers are required to follow up. However, this is only part of the reality, as not all persons who have a diarrhoeal illness go to their GP and of those who do, not all will submit a specimen. This said, the incidence of all types of food poisoning is generally coming down.

Table 5.1 Laboratory Confirmed Food borne infections (2005-2010)

Organism Isolated	2005	2006	2007	2008	2009	2010
Campylobacter Species	38	48	67	37	31	29
Salmonella species	28	22	14	26	18	12
Hepatitis A	3		4	2	4	3
Shigella species	4			1	2	0
Grand total	**73**	**70**	**85**	**66**	**55**	**44**

5.8 Food Hygiene Training

Environmental Health Officers of the Agency deliver Food Safety training for persons employed in the catering, food retail, healthcare and service industries.

Every year several people in Gibraltar still suffer from the effects of food poisoning bacteria, with symptoms such as diarrhoea, nausea, vomiting and stomach cramps. Many of these people will have eaten food that has been contaminated by poor food hygiene practices during preparation, storage or cooking.

The importance of good food hygiene practices and procedures should not be underestimated. Employers have a legal obligation to comply with the Food Hygiene Regulations.

The Chartered Institute of Environmental Health (CIEH) accredits training courses and approves all our trainers. Courses have been re-designed to be more relevant to specific

business environments and are suitable for anyone working where food is prepared, handled or cooked.

The range of courses currently delivered is as follows:

CIEH Level 1 in Food Safety Awareness in Catering & Retail

CIEH Level 2 in Food Safety in Catering & Retail

CIEH Level 3 Food Safety for Supervisors

During the year, four courses were held at Level 1 with a total of 45 candidates; three courses at Level 2 with 29 candidates and one course at level 3 with 15 candidates.

Chapter 6:

Noise

6.1 What is noise?

Noise is unwanted or harmful sound created by human activities and at times may affect our quality of life. Noise arising from vehicles, playing loud music, construction works etc contributes to environmental noise.

6.2 Noise Complaints

Many of us may be affected at one time or another by neighbourhood noise. The noise could come from someone living near you playing loud music, construction activities in the street, or a business operating machinery. It is always best to approach the person making the noise first and explain that you are being affected by the noise. It could well be that they be completely unaware that you are being disturbed. However if this approach does not work, then you can complain officially to the Environmental Agency or the Royal Gibraltar Police. These two authorities have power to act against different sources of neighbourhood noise.

The Royal Gibraltar Police deals with noise arising from motor cycle, loud music from cars and licensed premises.

The Environmental Agency deals with noise problems arising from construction sites, air conditioning plant, generators etc. The Agency will also investigate problems with loud music coming from dwellings. It can also take action against the operators of licensed premises for causing a noise nuisance at any time of the day or night whilst Royal Gibraltar Police will invariably take action if the noise nuisance occurs after the licensed hours.

6.2.1 What actions can be taken

The two authorities have powers to deal with noise under their jurisdiction in different ways for example, the Royal Gibraltar Police have powers to report offenders and the Environmental Agency has powers to serve notices requiring any noise considered a nuisance, to be abated.

Table 6.1 Noise Complaints received by the Environmental Agency in 2010.

Source of Noise	No. of complaints
Establishments	10
Industrial	14
Shipping	0
Construction	18
Neighbours	9
Dogs	3
Misc	7
Alarms	3
Total	**64**

The total number of noise complaints received by the Royal Gibraltar Police in 2010 was 761. From this total, general noise complaints amounted to 333 calls and 428 were in relation to loud music. The total noise complaints received by both entities in 2010 were 825.

Chapter 7:

Public Awareness

UNEP

WED2010

WORLD ENVIRONMENT DAY • 5 JUNE

MANY SPECIESONE PLANETONE FUTURE

7.1 Environmental Education

Environmental education refers to organised efforts to teach about how natural environments function and, in particular, how human beings can seek to manage their behaviour and ecosystems in order to live sustainably. It refers not only to education within the school system but to all efforts to educate the public including print materials, websites and media campaigns.

Environmental education is a learning process that increase people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges and fosters attitudes, motivations and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1978).

It focuses on:

- Awareness and sensitivity to the environment and environmental challenges
- Knowledge and understanding of the environment and environmental challenges
- Attitudes of concern for the environment and motivation to maintain or improve environmental quality
- Skills to identify and help resolve environmental challenges
- Participation in activities that lead to the resolution of environmental challenges

7.2 World Environment Day

This annual celebration is one of the principal vehicles through which the United Nations stimulates environmental awareness. This year's theme was Biodiversity: Many Species, One Planet, One Future. This year the UN is sending out the message that we are all an integral part of nature and that our future is tightly linked with that of our biodiversity; the huge variety of other animals and plants, the places they live and their surrounding environments.

We rely on this diversity of life to provide us with the food, fuel, medicine and other essentials we simply cannot live without, yet this rich biodiversity is being lost at an alarming rate as a result of human activities.

World Environment Day is the culmination of the Environmental Education Programme, conducted in collaboration with the Department of Education, which involves all local schools

and each year, focuses on a different theme.

The Ministry for the Environment once again spearheaded Gibraltar's involvement in World Environment Day. The celebrations began on Friday 4th June with the traditional school productions. Pupils from nearly all primary, middle and comprehensive schools took part, performing songs and dances with an environmental message.

On Saturday 5th June, the focus moved to Casemates where an Environmental Trade Fair was held. Local companies selling environmental goods or services, NGO's and government departments were all at the Square displaying information and products. Some highlights of this year's event included a display of selected entries for the "Look Around You" photography competition, a Radio Gibraltar Roadshow and a mini WEEE Park (Waste Electrical & Electronic Equipment).

The WEEE Park

Recent changes in legislation now require everyone to recycle their waste electrical and electronic equipment (WEEE). The Department of the Environment put up a small WEEE Park at the Trade Fair where members of the public were able to deposit small items of WEEE and find out more about what the regulations mean to them.

7.3 Biodiversity Photographic Competition

The Ministry for the Environment marked the UN International Year of Biodiversity by holding a photographic competition, designed to encourage young people and adults to engage with nature and to consider what the global loss of biodiversity would mean.

Participants were asked to submit a photograph that they felt captured the concept of biodiversity – anything from a favourite tree or plant to an interesting animal, insect or habitat. The image needed to illustrate why biodiversity is important and why we should try to preserve it and be accompanied by a short explanation.

The competition had two categories, senior and junior, and was judged by Leslie Linares of the Gibraltar Photographic Society and Albert Bruzon, Principal Secretary of the Department of the Environment. Winners were selected on the basis of creativity, photograph quality and effective illustration of what biodiversity means.

The winners of the Junior competition were:

1st Aerton Griffin Antoniou

2nd James Lavarello

3rd Oscar Cruz

In the Senior competition the prizes were awarded as follows:

1st Sonia McKay

2nd Luis Pitto

3rd Rosie Goodall

Selected photos from other entrants have been used throughout this report (see photo credits).

First Prize Junior

Aerton Antoniou

It's spiders webs and plants and they are natural.

First Prize Senior

Sonia McKay

Biodiversity is about the infinite variety of life in all forms; some so strange that they hardly appear to be life at all.

But somewhere, sometime, someone or something is always having a bad hair day!