



EARTHCHECK

# BENCHMARKING ASSESSMENT REPORT

## COMMUNITY BENCHMARKING

**SNAEFELLSNES PENINSULA**  
STYKKISHOLMI, ICELAND



REPORT DATE: 15 December 2015

Benchmarking Data Collection Period: 1 January 2014 – 31 December 2014

*The planet deserves more than half measures*

This annual assessment of the **Snaefellsnes Peninsula** was undertaken against EarthCheck benchmarking indicators and checklists developed for EarthCheck and listed below<sup>1</sup>. They have been carefully selected to track performance in key areas of environmental and social performance impact. The lead agency responsible for collection, collation and authorisation of the information required by the indicators was the **Snaefellsnes Council of Executives**.

Indicator Measure (Benchmark)		
1	Policy	Policy is produced and in place <sup>2</sup>
2	Energy	Energy Consumption (GJ / Person Year) <sup>3</sup>
		Green Power (%) <sup>3</sup>
		Greenhouse Gas Emissions (Scope 1 and Scope 2) (t CO <sub>2</sub> -e / Person Year) <sup>3</sup>
		Indirect Emissions (Scope 3) (t CO <sub>2</sub> -e / Person Year) <sup>3</sup>
3	Water	Potable Water Consumption (kL / Person Year) <sup>3</sup>
		Recycled / Captured Water (%) <sup>4</sup>
4	Waste	Waste Sent to Landfill (m <sup>3</sup> / Person Year) <sup>3</sup>
		Recycled / Reused / Composted Waste (%) <sup>4</sup>
5	Sector Specific	Nitrous Oxides Produced (kg / Person Year / Hectare) <sup>5</sup>
		Sulphur Dioxide Produced (kg / Person Year / Hectare) <sup>5</sup>
		Particulate Matter Produced (kg / Person Year / Hectare) <sup>5</sup>
		Water Samples Passed (%) <sup>2</sup>
		Habitat Conservation Area (%) <sup>2</sup>
		Green Space (%) <sup>2</sup>
		Accredited Operations (%) <sup>2</sup>
Lead Agency Performance		
6		Water Savings Rating (Points) <sup>6</sup>
		Waste Recycling Rating (Points) <sup>6</sup>
		Paper Products Rating (Points) <sup>6</sup>
		Cleaning Products Rating (Points) <sup>6</sup>
		Pesticide Products Rating (Points) <sup>6</sup>

**1** Please refer to the relevant EarthCheck Sector Benchmarking Indicator (SBI) document for more details. For frequently asked questions (FAQs) about benchmarking or specific help, please log on to 'My EarthCheck'

**2** Produced by the lead agency after consultation with the community and consensus

**3** Person year is equivalent to 365 person days. EarthCheck Communities must also allow for both resident and transient (tourist) populations in indicators assessed on a per person year basis. Tourist activity is classified into an "overnight stay" or "day tripper". An overnight stay is counted the same as a permanent resident, that is, 1 person day. A day tripper is counted as 0.333 person day

**4**. These indicators are for guidance only and do not affect the overall benchmarking evaluation

**5**. Primary assessed impacts on air quality are emissions due to electricity consumption, vehicular transport, industrial processes and mining. The levels are calculated on a per unit area basis using total emissions and total bounded area of the Community, including waterways. The data is then normalized against the average number of person years per area of the country

**6**. Assessed for the lead agency only

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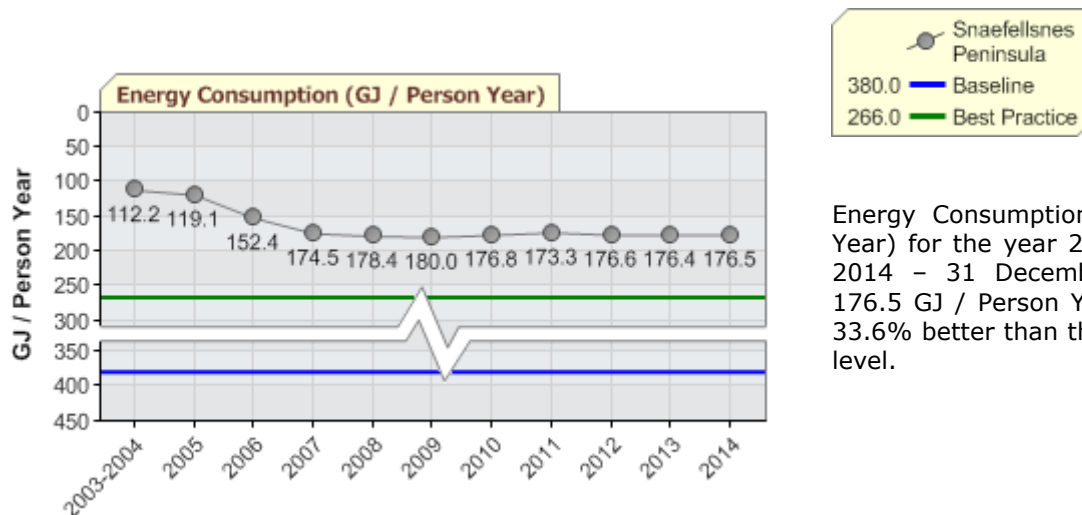
# COMMUNITY PERFORMANCE BENCHMARKS

**Current performance:** Below Baseline ✖ At or above Baseline ✔ At or above Best Practice ★

## 1. Policy ★

## 2. Energy

### Energy Consumption (GJ / Person Year) ★

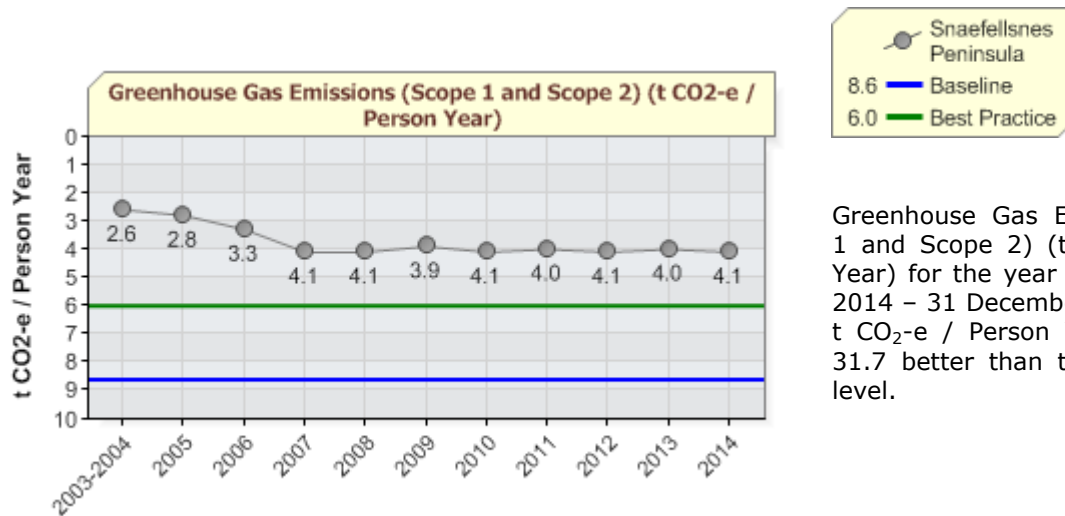


Energy Consumption (GJ / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 176.5 GJ / Person Year, which was 33.6% better than the Best Practice level.

### Green Power (%)

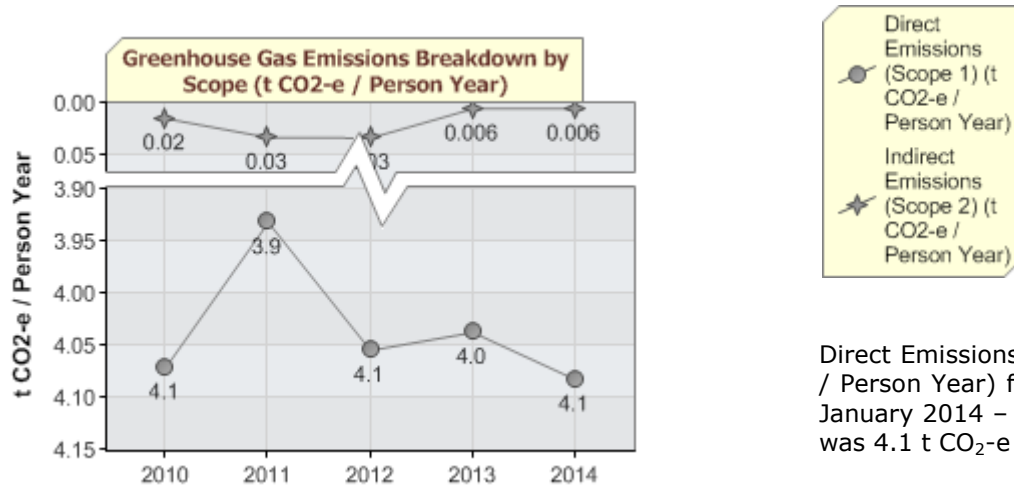
N/a

## Greenhouse Gas Emissions (Scope 1 and Scope 2) (t CO<sub>2</sub>-e / Person Year) ★



Greenhouse Gas Emissions (Scope 1 and Scope 2) (t CO<sub>2</sub>-e / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 4.1 t CO<sub>2</sub>-e / Person Year, which was 31.7 better than the Best Practice level.

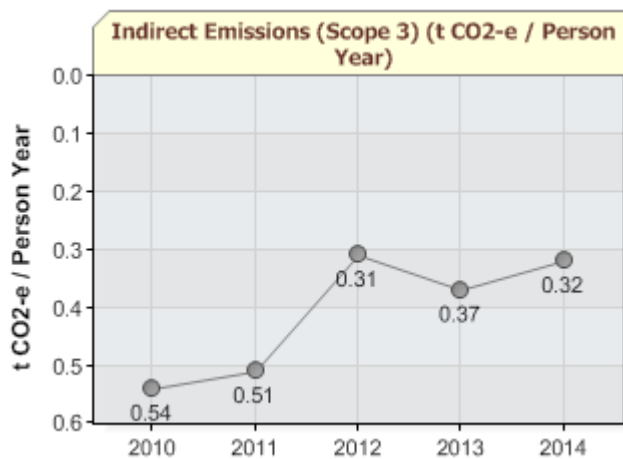
## Greenhouse Gas Emissions Breakdown by Scope (t CO<sub>2</sub>-e / Person Year)



Direct Emissions (Scope 1) (t CO<sub>2</sub>-e / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 4.1 t CO<sub>2</sub>-e / Person Year.

Indirect Emissions (Scope 2) (t CO<sub>2</sub>-e / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 0.006 t CO<sub>2</sub>-e / Person Year.

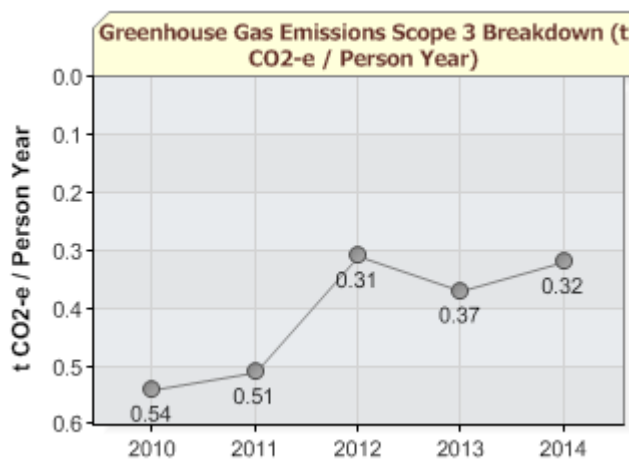
### Indirect Emissions (Scope 3) (t CO<sub>2</sub>-e / Person Year)



Snæfellsnes Peninsula

Indirect Emissions (Scope 3) (t CO<sub>2</sub>-e / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 0.32 t CO<sub>2</sub>-e / Person Year.

### Greenhouse Gas Emissions Scope 3 Breakdown (t CO<sub>2</sub>-e / Person Year)



Waste Indirect Emissions (Scope 3) t CO<sub>2</sub>-e / Person Year

Transport Indirect Emissions (Scope 3) t CO<sub>2</sub>-e / Person Year

Transport Indirect Emissions (Scope 3) (t CO<sub>2</sub>-e / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) not measured as no data entered.

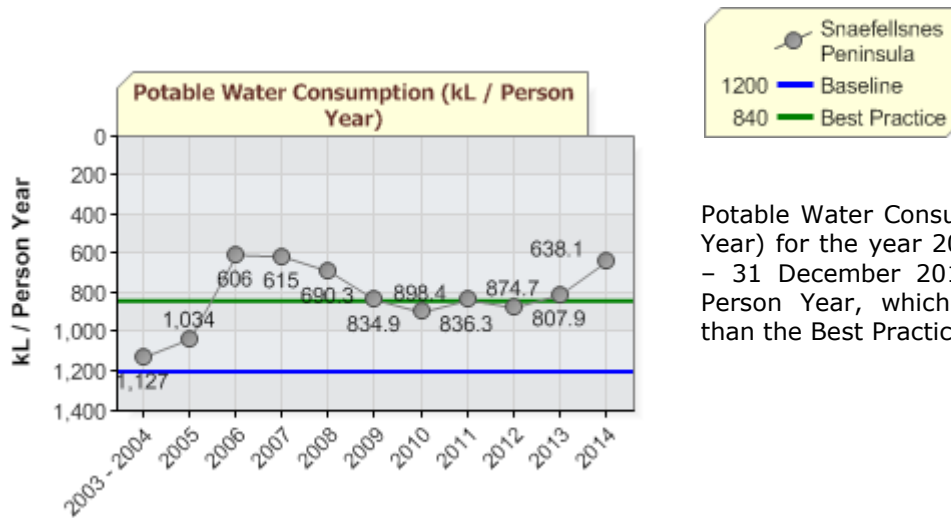
Waste Indirect Emissions (Scope 3) (t CO<sub>2</sub>-e / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 0.32 t CO<sub>2</sub>-e / Person Year.

Direct Emissions (Scope 1)									
Stationary Fuel Combustion									
2014									
Type	Quantity	Unit	Energy Consumption (MJ)	CO <sub>2</sub> Emission Estimate (t CO <sub>2</sub> -e)	CH <sub>4</sub> Emission Estimate (t CO <sub>2</sub> -e)	N <sub>2</sub> O Emission Estimate (t CO <sub>2</sub> -e)	Total Emission Estimate (t CO <sub>2</sub> -e)		
Heavy fuel oil	87569	litres (L)	3346552.5	246.1	0.7	0.6	247.3		
subtotal			3346552.5	246.1	0.7	0.6	247.3		
Mobile Fuel Combustion (road)									
2014									
Type	Quantity	Unit	Energy Consumption (MJ)	CO <sub>2</sub> Emission Estimate (t CO <sub>2</sub> -e)	CH <sub>4</sub> Emission Estimate (t CO <sub>2</sub> -e)	N <sub>2</sub> O Emission Estimate (t CO <sub>2</sub> -e)	Total Emission Estimate (t CO <sub>2</sub> -e)		
Motor gasoline	2143671	litres (L)	73318863.4	4826.9	36.6	172.7	5036.3		
Diesel	3751319	litres (L)	143288756.7	10086.8	11.1	164.6	10262.5		
subtotal			216607620.1	14913.8	47.7	337.3	15298.8		
Mobile Fuel Combustion (water)									
2014									
Type	Quantity	Unit	Energy Consumption (MJ)	CO <sub>2</sub> Emission Estimate (t CO <sub>2</sub> -e)	CH <sub>4</sub> Emission Estimate (t CO <sub>2</sub> -e)	N <sub>2</sub> O Emission Estimate (t CO <sub>2</sub> -e)	Total Emission Estimate (t CO <sub>2</sub> -e)		
Heavy fuel oil	873268	litres (L)	33372965.3	2453.9	4.7	19.7	2478.2		
subtotal			33372965.3	2453.9	4.7	19.7	2478.2		
TOTAL			253327138.0	17613.7	53.0	357.6	18024.4		
Indirect Emissions (Scope 2)									
Purchased Electricity									
2014									
Quantity	Unit	% Green Power	Provider	Energy Consumption (MJ)	CO <sub>2</sub> Emission Estimate (t CO <sub>2</sub> -e)	CH <sub>4</sub> Emission Estimate (t CO <sub>2</sub> -e)	N <sub>2</sub> O Emission Estimate (t CO <sub>2</sub> -e)	Total Emission Estimate (t CO <sub>2</sub> -e)	
93649242	Kilowatt hour (kWh)	N/A*	Iceland	337137271.2	17.1	0.06	0.3	17.5	
241400	Kilowatt hour (kWh)	N/A*	Iceland	869040.0	0.04	0.0002	0.0007	0.05	
52256740	Kilowatt hour (kWh)	N/A*	Iceland	188124264.0	9.6	0.03	0.2	9.8	
subtotal				526130575.2	26.7	0.09	0.5	27.3	
TOTAL				526130575.2	26.7	0.09	0.5	27.3	
Greenhouse Gas Emissions (Scope 1 and Scope 2)									
GRAND TOTAL				779457713.2	17640.5	53.1	358.0	18051.6	
Indirect Emissions (Scope 3)									
Waste Sent to Landfill									
2014									
Quantity	Unit	Type of Landfill	Type of Waste	Type of Operation	Source	CO <sub>2</sub> Emission Estimate (t CO <sub>2</sub> -e)	CH <sub>4</sub> Emission Estimate (t CO <sub>2</sub> -e)	N <sub>2</sub> O Emission Estimate (t CO <sub>2</sub> -e)	Total Emission Estimate (t CO <sub>2</sub> -e)
1178782	kilograms (uncompacted)	Covered and/or managed waste treatment facility	Unknown (mixed waste types)	Other Operation	International	0.0	1414.5	0.0	1414.5
subtotal						0.0	1414.5	0.0	1414.5
TOTAL						0.0	1414.5	0.0	1414.5

\*A Green Power Agreement is unavailable for purchase as the standard grid electricity supply is from close to 100% renewable energy sources.

### 3. Water

#### Potable Water Consumption (kL / Person Year) ★

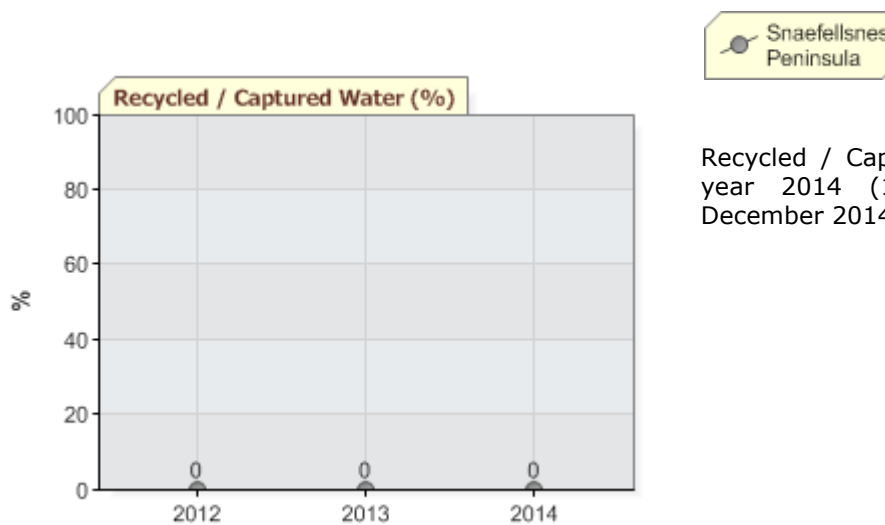


Potable Water Consumption (kL / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 638.1 kL / Person Year, which was 24.0% better than the Best Practice level.

#### 2014

Quantity	Unit	Potable Water Consumption (kL)
2817852	kilolitres (kL)	2817852.0 kL
	<b>TOTAL</b>	<b>2817852.0 kL</b>

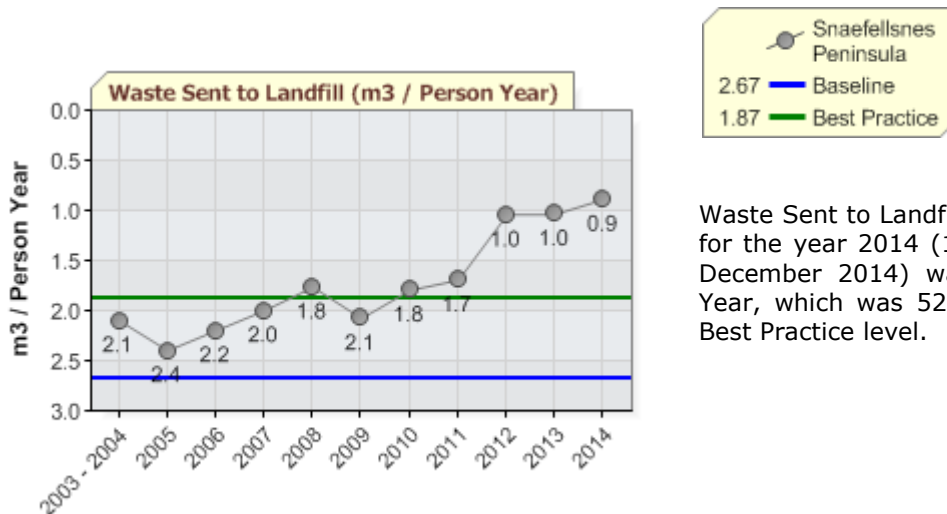
#### Recycled / Captured Water (%)



Recycled / Captured Water (%) for the year 2014 (1 January 2014 – 31 December 2014) was 0%.

## 4. Waste

### Waste Sent to Landfill (m<sup>3</sup> / Person Year) ★



Waste Sent to Landfill (m<sup>3</sup> / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 0.9 m<sup>3</sup> / Person Year, which was 52.3% better than the Best Practice level.

#### 2014

Quantity	Unit	Type of Landfill	Type of Waste	Type of Operation	Waste Sent to Landfill (m <sup>3</sup> )
1178782	kilograms (uncompacted)	Covered and/or managed waste treatment facility	Unknown (mixed waste types)	Other Operation	3929.3 m <sup>3</sup>
<b>TOTAL</b>					<b>3929.3 m<sup>3</sup></b>

### Recycled / Reused / Composted Waste (%)

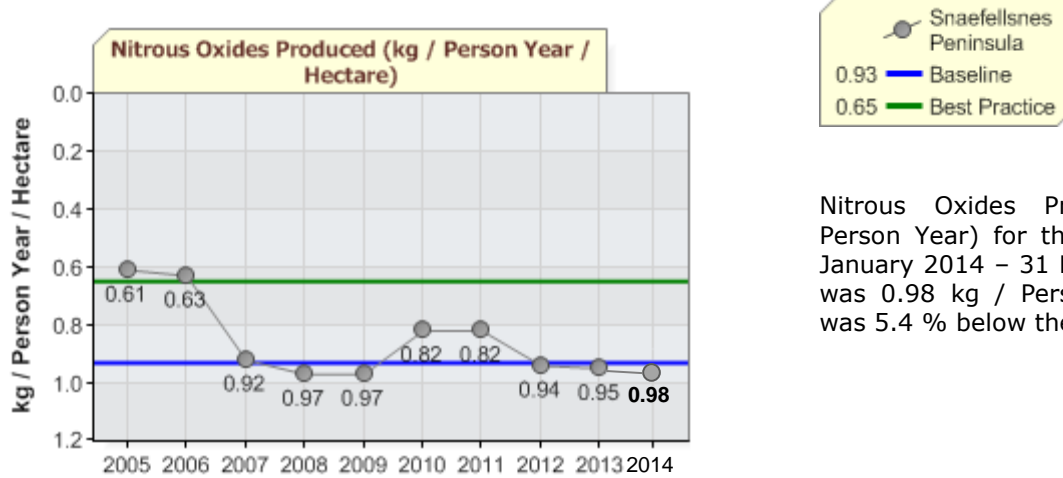


Recycled / Reused / Composted Waste (%) for the year 2014 (1 January 2014 – 31 December 2014) was 42.5%.



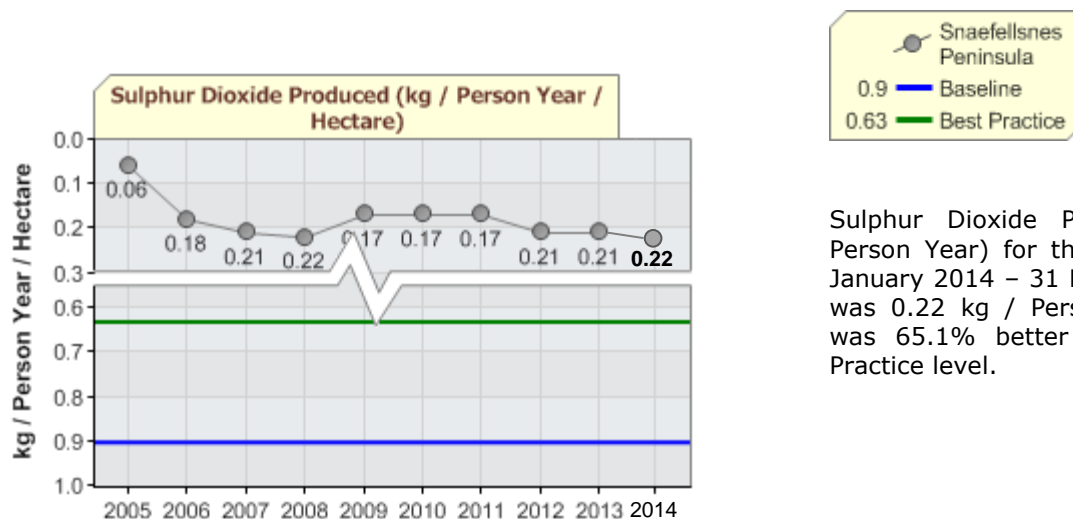
## 5. Sector Specific

### Nitrous Oxides Produced (kg / Person Year / Hectare) ✕



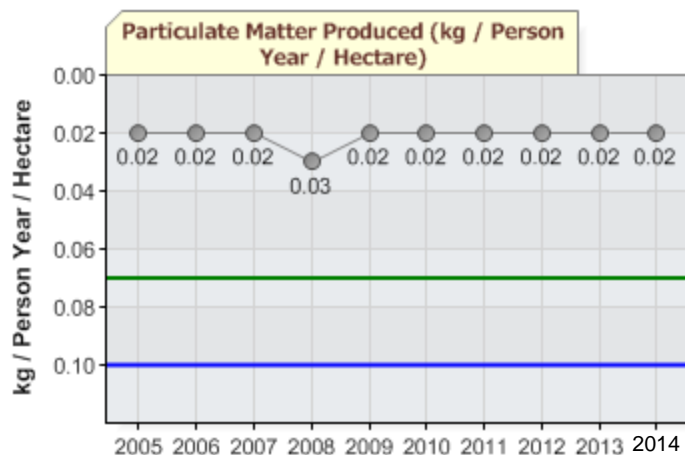
Nitrous Oxides Produced (kg / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 0.98 kg / Person Year, which was 5.4 % below the Baseline level.

### Sulphur Dioxide Produced (kg / Person Year / Hectare) ★



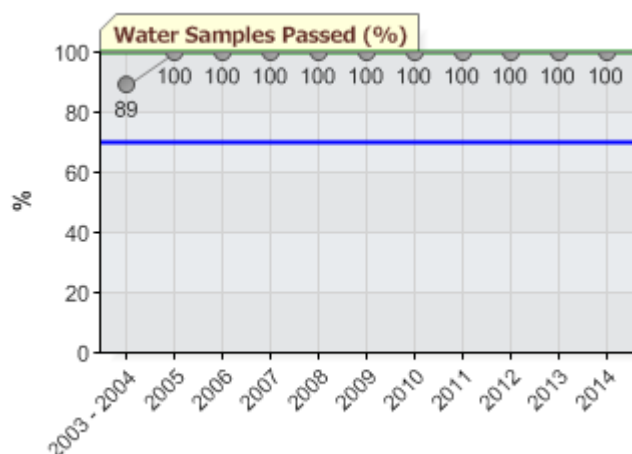
Sulphur Dioxide Produced (kg / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 0.22 kg / Person Year, which was 65.1% better than the Best Practice level.

## Particulate Matter Produced (kg / Person Year / Hectare) ★



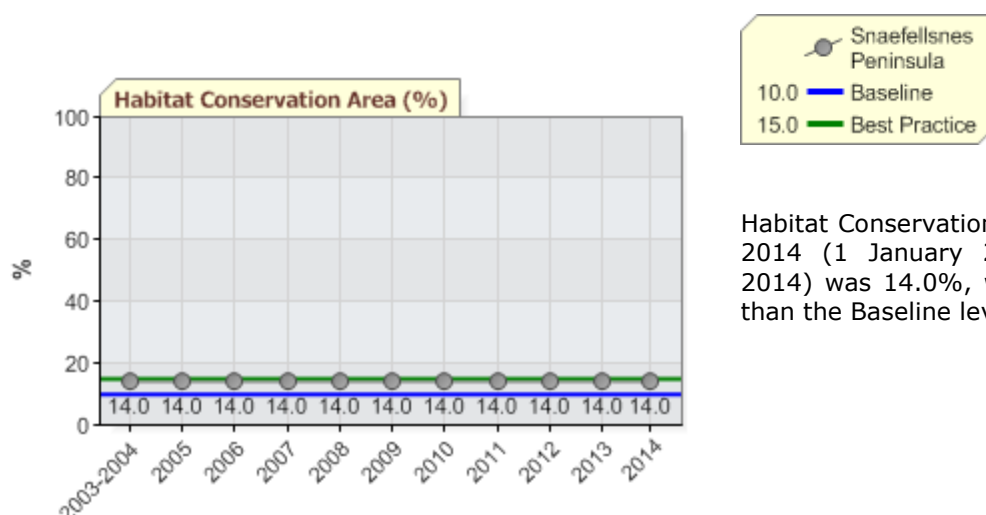
Particulate Matter Produced (kg / Person Year) for the year 2014 (1 January 2014 – 31 December 2014) was 0.02 kg / Person Year, which was 71.4% better than the Best Practice level.

## Water Samples Passed (%) ★



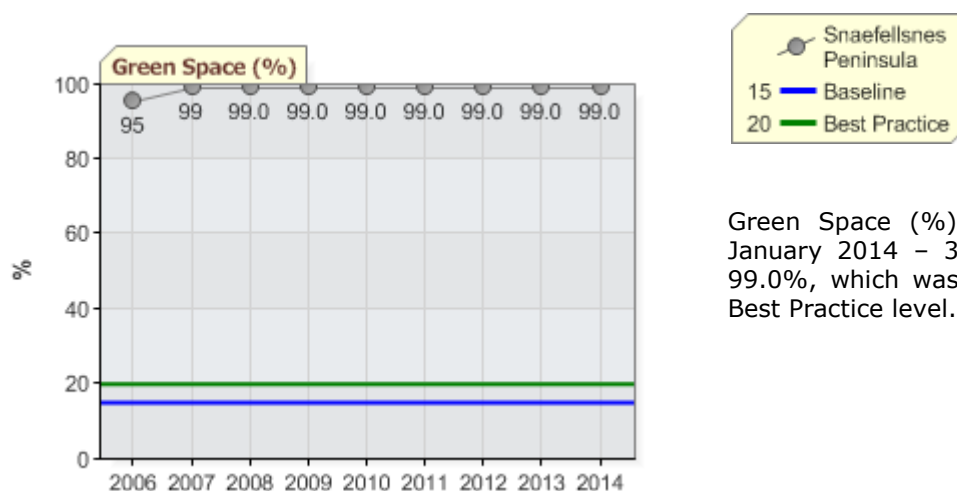
Water Samples Passed (%) for the year 2014 (1 January 2014 – 31 December 2014) was 100%, which was at the Best Practice level.

## Habitat Conservation Area (%) ✓



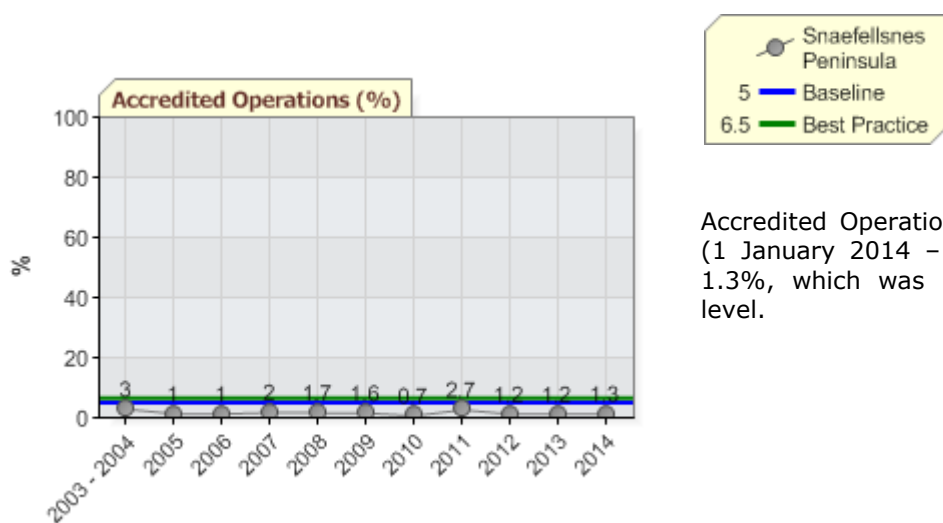
Habitat Conservation Area (%) for the year 2014 (1 January 2014 – 31 December 2014) was 14.0%, which was 4.0% better than the Baseline level.

## Green Space (%) ★



Green Space (%) for the year 2014 (1 January 2014 – 31 December 2014) was 99.0%, which was 79.0% better than the Best Practice level.

## Accredited Operations (%) ✕

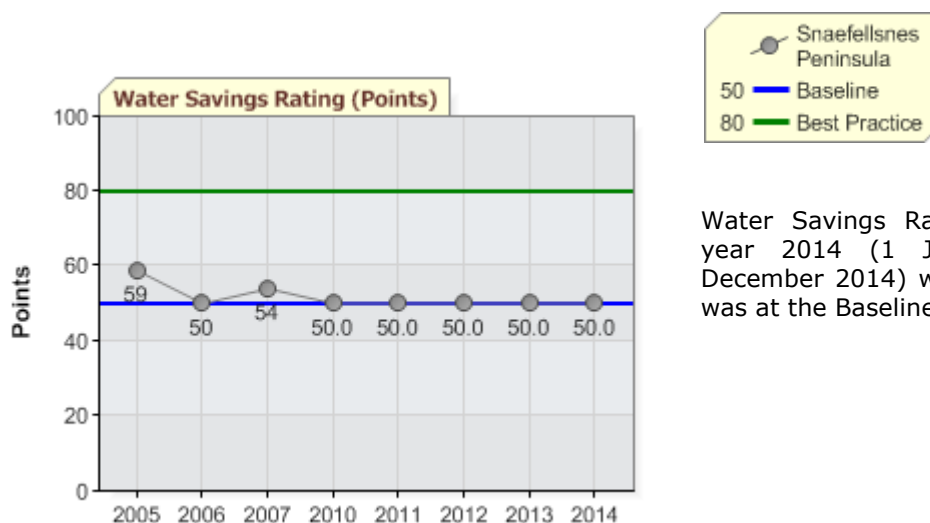


Accredited Operations (%) for the year 2014 (1 January 2014 – 31 December 2014) was 1.3%, which was 3.7% below the Baseline level.

## 6. Lead Agency Performance

### Water

#### Water Savings Rating (Points) ✓

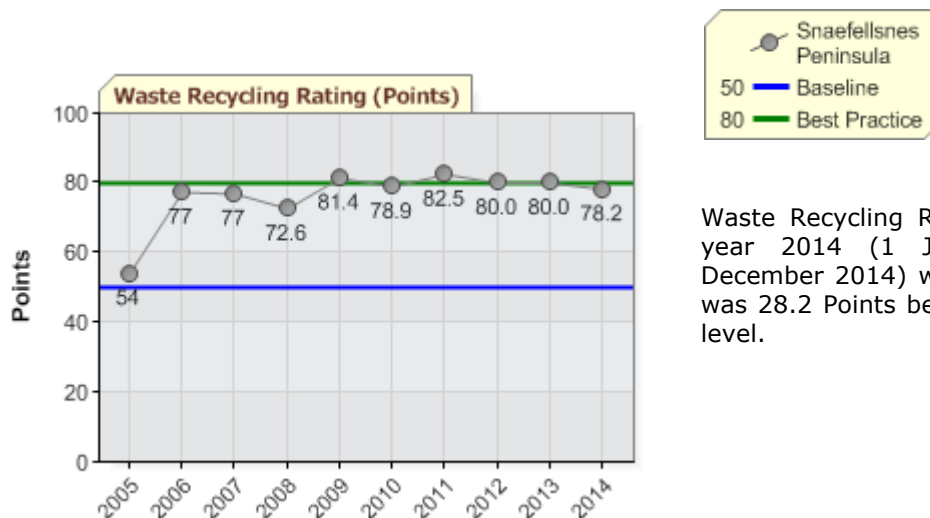


Water Savings Rating (Points) for the year 2014 (1 January 2014 – 31 December 2014) was 50.0 Points, which was at the Baseline level.

Water Savings Measures	Frequency / Percentage Rating	Water Savings Rating (Points)
Check for leaks	Relevant / Not Available	50.0 Points
Low/dual flush toilets	Relevant / Not Available	50.0 Points
Low flow tap fittings	Relevant / Not Available	50.0 Points
Low flow shower fittings	Relevant / Not Available	50.0 Points
Water sprinklers used after dark	Relevant / Not Available	50.0 Points
Minimal irrigation landscaping	Relevant / Not Available	50.0 Points
Use of recycle/grey/rain water	Relevant / Not Available	50.0 Points
	<b>Overall Rating:</b>	<b>50.0 Points</b>

## Waste

### Waste Recycling Rating (Points) ✓

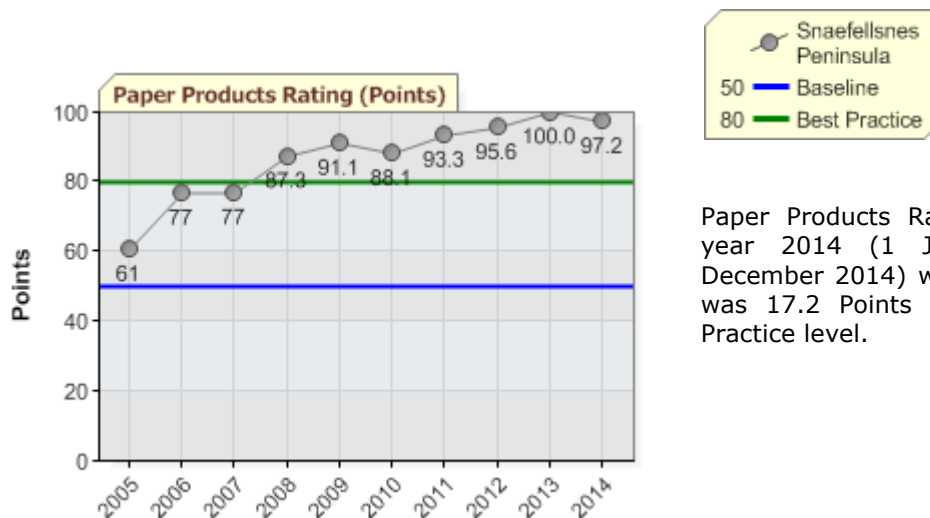


Waste Recycling Rating (Points) for the year 2014 (1 January 2014 – 31 December 2014) was 78.2 Points, which was 28.2 Points better than the Baseline level.

Waste Recycling Measures	Frequency / Percentage Rating	Waste Recycling Rating (Points)
Glass	80-99%	88.9 Points
Paper/card	20-39%	58.8 Points
Iron & steel (ferrous metals)	80-99%	88.9 Points
Other metals (non-ferrous)	80-99%	88.9 Points
Plastics	80-99%	88.9 Points
Rubber	20-39%	58.8 Points
Green waste	60-79%	73.9 Points
<b>Overall Rating:</b>		<b>78.2 Points</b>

## Paper

### Paper Products Rating (Points) ★



Paper Products Rating (Points) for the year 2014 (1 January 2014 – 31 December 2014) was 97.2 Points, which was 17.2 Points better than the Best Practice level.

Paper Products Measures	Frequency / Percentage Rating	Paper Products Rating (Points)
Office paper	80-99%	88.9 Points
Serviettes	Not Relevant / Available	-
Tissues	100%	100.0 Points
Toilet tissue	100%	100.0 Points
Paper towels	100%	100.0 Points
<b>Overall Rating:</b>		<b>97.2 Points</b>

## Cleaning

### Cleaning Products Rating (Points) ★



Cleaning Products Rating (Points) for the year 2014 (1 January 2014 – 31 December 2014) was 83.1 Points, which was 3.1 Points better than the Best Practice level.

Cleaning Products Measures	Frequency / Percentage Rating	Cleaning Products Rating (Points)
Hard floor cleaners	1-19%	54.0 Points
Carpet cleaners	Not Relevant / Available	100.0 Points
Interior surface cleaners	40-59%	65.1 Points
External surface cleaners	Not Relevant / Available	100.0 Points
Glass cleaners	80-99%	88.9 Points
Detergents	60-79%	73.9 Points
Personal hygiene	Not Relevant / Available	100.0 Points
	<b>Overall Rating:</b>	<b>83.1 Points</b>



## Pesticides

### Pesticide Products Rating (Points) ★



Pesticide Products Rating (Points) for the year 2014 (1 January 2014 – 31 December 2014) was 100.0 Points, which was 20.0 Points better than the Best Practice level.

If your operation does not use any pesticide products (which is a positive outcome), a rating of 100 will be reported for this indicator on the basis that no use represents a Best Practice achievement.

Pesticide Products Measures	Frequency / Percentage Rating	Pesticide Products Rating (Points)
Weed killers	Not Relevant / Available	100.0 Points
Fungal killers	Not Relevant / Available	100.0 Points
Rodent killers	Not Relevant / Available	100.0 Points
Insect killers	Not Relevant / Available	100.0 Points
	<b>Overall Rating:</b>	<b>100.0 Points</b>

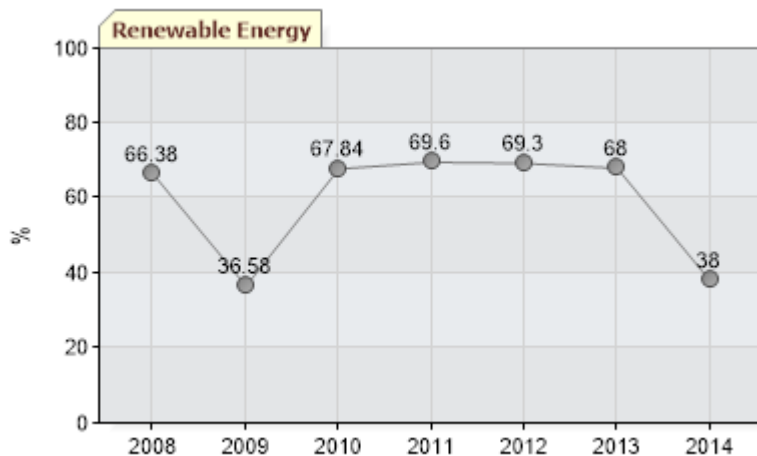
## OPTIONAL BENCHMARKING INDICATORS

The **Snaefellsnes Peninsula** has also nominated optional Operation Selected and Specified Indicator/s that they consider relevant to their specific operation and locality. The Operation Selected and Specified Indicator/s do not form part of the formal annual benchmarking exercise.

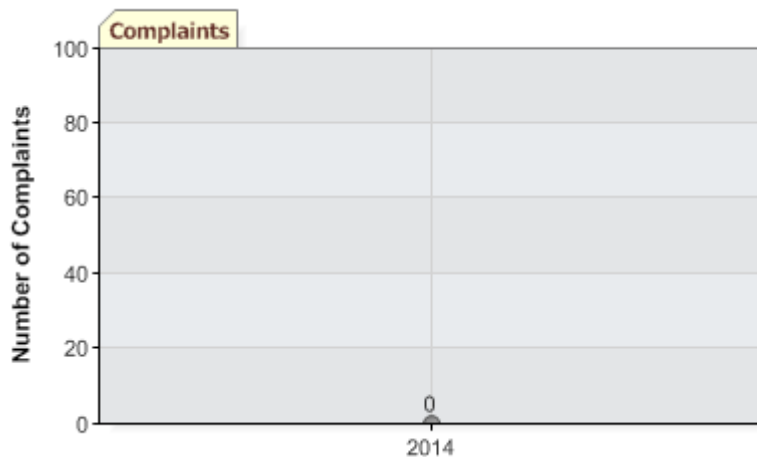
### 1. Selected Indicators

Selected Indicators are from a supplied list of EarthCheck indicators.

#### Renewable Energy



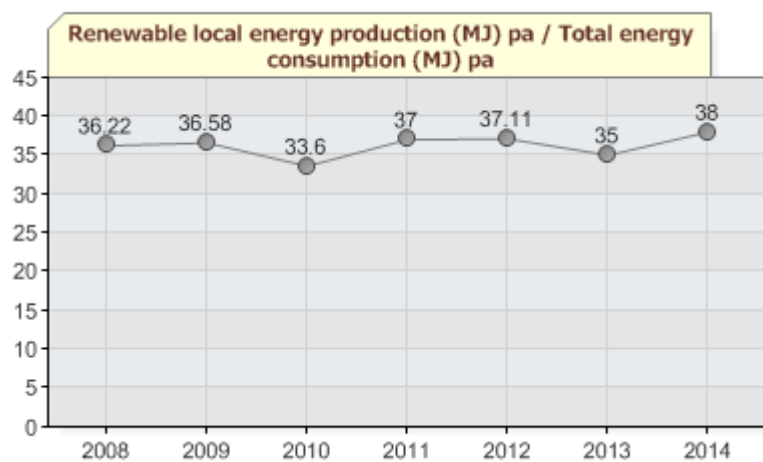
#### Complaints



## 2. Specified Indicators

Specified Indicators are devised by the operator for local and/or internal performance assessment.

### **Renewable local energy production (MJ) pa / Total energy consumption (MJ) pa**

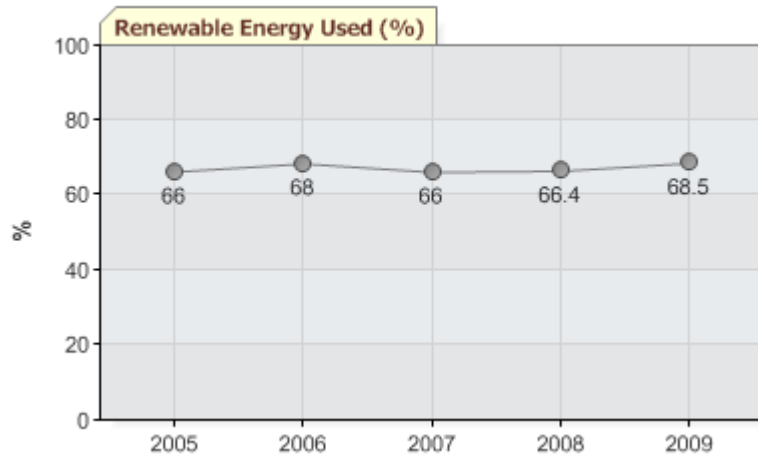


# HISTORIC BENCHMARKING INDICATORS

## 1. Renewable Energy

Renewable Energy % is no longer a supplementary indicator; it is included here for historical reference.

### Renewable Energy Used (%)



The supplied data has been compiled by the **Snaefellsnes Peninsula** in the prescribed manner, authorised by a senior executive of the company and submitted for an annual assessment.

## CONCLUSION AND RECOMMENDATIONS

Congratulations, the **Snaefellsnes Peninsula** has met the requirements to be recognised as an EarthCheck Benchmarked Community.

In addition to having a Sustainability Policy in place, fourteen of the assessed EarthCheck indicators are at or above the Baseline level. From the benchmarking data provided, eleven indicators, *Energy Consumption*, *Greenhouse Gas Emissions (Scope 1 and Scope 2)*, *Potable Water Consumption*, *Waste Sent to Landfill*, *Sulphur Dioxide Produced*, *Particulate Matter Produced*, *Water Samples Passed*, *Green Space*, *Paper Products Rating*, *Cleaning Products Rating*, and *Pesticide Products Rating*, are at or above the Best Practice level, which is an achievement to be very highly commended.

The two indicators that fell below the Baseline level were *Nitrous Oxides Produced* and *Accredited Operations*.

The value for *Nitrous Oxides Produced* was 5.4% below the Baseline Level. The **Snaefellsnes Peninsula** is encouraged to make improvements to ensure that Air Quality (NO<sub>x</sub>) will meet the Baseline level for the next Benchmarking Period.

The value for *Accredited Operations* was 3.7% below the Baseline Level. The **Snaefellsnes Peninsula** is encouraged to promote environmental accreditation to hotels, restaurants and other business within the community.

Improvements in all the EarthCheck indicators will not only help the environment, but can also help reduce operational costs. Due to the positive commitment that the **Snaefellsnes Peninsula** has demonstrated to the environment, the assessors are confident that they can maintain or improve performance, where appropriate and practical, in all indicators. In particular over the next 12 months, the **Snaefellsnes Peninsula** is encouraged to ensure that *Nitrous Oxides Produced* and *Accredited Operations* are at Baseline performance or better. In line with EarthCheck Policy this would enable the **Snaefellsnes Peninsula** to continue to meet the benchmarking requirements of the EarthCheck program.

## APPENDIX

### SUBMISSION COMMENTS

The following comments were provided at time of submission:

*"I have sent Benchmarking comments" report to my EarthCheck relationship manager (Lea). These comments explain our calculations, data collection methods and why some indicators are not applicable."*

### **Activity Measure**

#### **2.1 Person Years**

The following table shows calculation of person years for the Snaefellsnes Community 2014.<sup>1</sup>

	Number	Days	Total (person years)	%
Residents	3.859	365	3.859	87,39
Overnight	155.288	1	425	9,63
Day Tripper	145.194	0,33	131	2,97
<b>Total</b>			<b>4.416</b>	<b>100,00</b>

**Table 1. Calculation of Person Years in Snaefellsnes 2014**

Number of residents, 1 January 2014, in the Snaefellsnes Community is gotten from Statistics Iceland ([www.hagstofa.is](http://www.hagstofa.is)) and can be divided between the five communities participating in the EarthCheck certification project. According to these numbers Stykkisholmsbær has 1095 residents, Helgafellssveit 53, Eyja- og Miklaholtshreppur 148, Grundarfjarðarbær 872 and Snaefellsbær 1691.

Statistics Iceland collects and compiles data on overnight stays in Iceland. In 2014 the total number for the Snaefellsnes Community was 155,288. No accurate data is available for day trippers. For the purpose of benchmarking for the last couple of years, the number of day-trippers has been estimated to be 93.5% of overnight stays. The same estimate is used this time.

#### **2.2 Total Community Area**

The total area of the Snaefellsnes community is  $1,479 \text{ km}^2 = 147,900 \text{ hectares (ha)}$ .

Numbers gotten in 2014 from the National Land Survey of Iceland ([www.lmi.is](http://www.lmi.is)).

## Energy Consumption:

### 3.2 Energy

Conversion factors used for the energy calculation are presented in table 2.

Conversion factors:	
1 kWh	= 3,6 MJ
1 L gasoline	= 34,2 MJ
1 L diesel	= 38,1 MJ
1 L oil (fuel)	= 38,2 MJ
1 m <sup>3</sup> geothermal water	= 50 kWh

Table 2. Conversion Factors.

The input data to EarthCheck Energy Calculator is presented in table 3. The formulas for the CO<sub>2</sub> emissions were derived directly from Earth Check's Energy Calculator.

Energy Consumption in Snæfellsnes 2014					
Energy Source	Units Energy Supplied in	Quantity of Energy used	% Renewable	Energy (MJ)	CO2 (tonnes)
Power Station Provided Grid Electricity					
Hydro	kWh	93.649.242	100	337.137.271	17,4
Sub Total - Power Grid Sources				337.137.271	17
Other Sector Energy Sources Used					
Hydro	kWh	241.400	100	869.040	0
Gasoline (automotive)	L (litre)	2.143.671	0	73.313.548	4.828
Diesel	L (litre)	3.751.319	0	142.925.254	10.089
Hydro	kWh	52.256.740	100	188.124.264	10
Oil (fuel) (for ships)	L (litre)	873.268	0	33.358.838	2.478
Oil (stationary)	L (litre)	87.569	0	3.345.136	247
Sub Total - Other Sources				441.936.080	17.652
Grand Total - All Sources				779.073.351	17.669
Renewable Energy Consumption/Total Energy Consumption				0,6753	

Table 3. Energy Consumption in Snæfellsnes 2014. The calculation of CO<sub>2</sub> emissions is received from the EarthCheck benchmarking software.

As shown in table 3 "Other Sector Energy Sources Used" consists of 5 sources:

1. Hydropower, 241,400 kWh. This refers to locally produced and consumed electricity at four farms in the Snæfellsnes area (Sydri-Knarrartunga, Thvera (two farms) and Hjardarfell) (see also explanations on Local Energy Production in the section on optional indicators at the bottom of this document). However for the years 2012, 2013 and 2014 the electricity production at Sydri-Knarrartunga has been non-existent due to landslides that ruined the power station.
2. Gasoline (automotive), 2,143,671 L. This is based on data from The Road Traffic Directorate (RTD (Umferðarstofa) in Reykjavík, (see Table 4). Same numbers have been

Table 4 shows vehicle data for the Snaefellsnes community 2014, based on information from The RTD, completed with assumptions where actual data was missing. Details for these assumptions are not given in this report but can easily be provided upon request.

Community: <i>Snaefellsnes</i>			Year:		2014		
Vehicle Type	Definition	Category in IRTD-database	Number registered by fuel type 2014		Average Vehicle Km Travelled per annum	Average Fuel Consumpt (l/100 km)	Fuel Usage (litres) per annum
Passenger	Vehicle mainly for personal transport, max 8 pers.	BI1 Fólksbifr.	Petrol	1.685	12.909	8,49	1.846.331
			Diesel	669	18.325	8,88	1.088.434
			LPG	8	12.909	4,50	4.647
Light Commercial A	Vehicle mainly for goods transport, max 3,500 kg.	BI4 Sendibifr.	Petrol	109	11.231	8,14	99.612
			Diesel	237	13.992	8,51	282.230
			LPG				0
Light Commercial B	Vehicle mainly for personal transport, min 8 pers., max 5,000 kg.	BI2 Hópbifr. 1	Petrol	3	8.500	15,00	3.825
			Diesel	14	25.059	11,25	39.467
			LPG				0
Heavy Duty A	Vehicle mainly for personal transport, min 8 pers., min 5,001 kg.	BI3 Hópbifr. 2	Petrol	0			0
			Diesel	16	16.069	40,00	102.841
			LPG				0
Heavy Duty B	Vehicle mainly for goods transport, 3,501-12,000 kg.	BI5 Vörubifr. 1	Petrol	4	18.504	25,00	18.504
			Diesel	74	16.543	25,00	306.045
			LPG				0
Heavy Duty C	Vehicle mainly for goods transport, min 12,001 kg.	BI6 Vörubifr. 2	Petrol				0
			Diesel	109	35.330	45,00	1.732.925
			LPG				0
Motorcycles A	Max 50 ccm	HJ2 - létt	Petrol	34	8.375	1,50	4.271
			Diesel				0
			LPG	1			0
Motorcycles B	Other	HJ3 - þung	Petrol	63	4.060	2,50	6.395
			Diesel				0
			LPG				0
Motorcycle C	Off road vehicle	Tofæruhjól og vélsleðar	Petrol	205	n/a	n/a	164.000
Tractors		Dráttarvélar	Petrol	1	n/a	n/a	733
			Diesel	272	n/a	n/a	199.376
			LPG				0
Total fuel usage in litres			Petrol				2.143.671
			Diesel				3.751.319
			LPG				4.647
Total vehicle fuel usage in litres (Grand Total)							5.899.638

Table 4. Vehicle data for Snaefellsnes 2014

The total energy consumption in the Snaefellsnes community was estimated to be 779,073,351 MJ in 2014, which equals 176,420 MJ pr. person year.

As before energy consumed by the local fishing fleet is excluded from the benchmarking data.



## Potable Water Consumption

### 3.3 Water

In 2014 the Snaefellsnes community consumed an estimated total of 2,533,703 kL (m<sup>3</sup>) of potable cold water. Water meters are installed at the wells supplying the towns of Grundarfjörður and Stykkishólmur with water, but actual monitoring is missing for the other towns. The water consumption of these is estimated to be the same per capita as for Grundarfjörður (2,094 l/person/day), while the usage in the countryside is estimated to be the same as average figures for similar communities in Iceland, (700 l/person/day (farms included)).

In addition to potable cold water, the water consumption data should include geothermal water used for cleaning purposes, as well as geothermal water used by the local swimming pools. Geothermal water for heating should however not be included, to maintain comparability with other communities using other energy sources and circulated water for heating.

As can be derived from table 3 and related comments, the total consumption of geothermal water in Snaefellsnes 2014 was 1,045,135 kL (m<sup>3</sup>). The available data does not distinguish between water for different purposes, (swimming pool, cleaning, heating, etc.). According to a report from The National Energy Authority, (Orkustofnun: *Jarðvarmaspá 2003–2030. Spá um beina nýtingu jarðvarma*. OS-2003/060, Reykjavík, December 2003), swimming pools might on average use 241 m<sup>3</sup> geothermal water annually pr. m<sup>2</sup> of pool surface. The swimming pool in Stykkishólmur has a surface area of approximately 396 m<sup>2</sup> according to the same report, which gives an estimated annual water usage of 95,436 kL of geothermal water pr. annum. Approximately 6,132 kL are used for barley drying at Dalsmynni farm, leaving 1,045,135 - 95,436 - 6,132 = 943,567 kL for other purposes, including heating. Swedish research (Source: Ívar, Orkustofnun) indicates that approximately 80% of geothermal water for households would be used for heating and 20% for cleaning and other purposes. The same does not necessarily apply to Iceland, but the Swedish assumption will be used here since no Icelandic estimate is available. According to this, some 20% of 943,567 kL might have been used for other purposes than heating, giving an estimate of 188,713 kL.

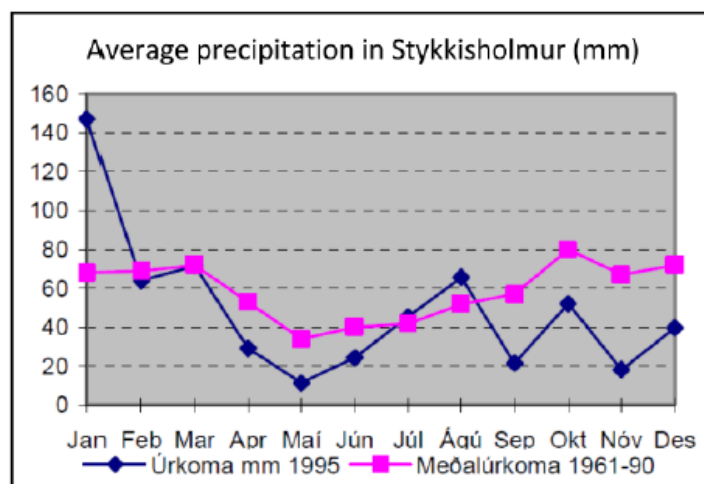
The above assumptions are summarized in table 5.

Purpose	kL
Potable cold water	2.533.703
Geothermal water for swimming pool	95.436
Geothermal water for other purposes, excl. heating	188.713
<b>Total</b>	<b>2.817.852</b>

Table 5. Estimated total water consumption in Snaefellsnes 2014

According to table 5, the total cold water consumption 2014 was 2,817,852 kL or 638 kL per person year.

Measurements or estimations for recycled/captured water are not relevant for Icelandic circumstances where clean water is an abundant resource in nearly all communities. Picture 1 shows average precipitation in Iceland.



Picture 1. The pink line shows average precipitation in Stykkisholmur in 1961-1990 (data from the Icelandic Met Office).

## Water Savings

The EarthCheck water saving checklist is only to a limited extent applicable to communities, and thus left out at this time by defining it as “Not Relevant / Not Available”.

Table 6 explains more thoroughly why these factors are “Not Relevant/ Not Available”.

Water Savings Measures	Relevant / Not Relevant
Check for leaks	The municipalities have not yet had the finances to start checking for leaks
Low/dual flush toilets	Since the water usage for the Snaefellsnes Peninsula is the total amount of water used by every inhabitant, municipal institutions, state run institution and privately run organizations this information is not relevant. The community cannot directly affect these factors but in its own institutions.
Low flow tap fittings	Since the water usage for the Snaefellsnes Peninsula is the total amount of water used by every inhabitant, municipal institutions, state run institution and privately run organizations this information is not relevant. The community cannot directly affect these factors but in its own institutions.
Low flow shower fittings	Since the water usage for the Snaefellsnes Peninsula is the total amount of water used by every inhabitant, municipal institutions, state run institution and privately run organizations this information is not relevant. The community cannot directly affect these factors but in its own institutions.
Water sprinklers used after dark	Water sprinklers are rarely used in the municipalities as rain is frequent in Snaefellsnes Peninsula. Sprinklers are never used after dark – so the information is not relevant.
Minimal irrigation landscaping	Not relevant in Iceland where clean water is an abundant resource in nearly all communities.
Use of recycle/grey/rain water	Not relevant in Iceland where clean water is an abundant resource in nearly all communities.

Table 6. Explanations regarding water savings in EarthCheck benchmarking software.

## Waste Sent to Landfill

### 3.4 Waste

Waste (uncompact) landfilled by the community in 2014 was 1,178 tonnes. The landfilled waste was 57.5% of the total waste production, leaving 42.5% for recycling/reusing.

Measurements or estimations for recycled/reused waste have been put into the checklist section of the online benchmarking software to some extent. The listing of material types in the checklist is however not appropriate for Iceland, as each of the categories is in real life normally divided into several subcategories with extremely different amounts and recycling opportunities. An example of this is glass, which should include e.g. the glass part of construction waste, which can be a huge amount but poorly registered. This category also includes drinking bottles, which are a part of the Icelandic refund system with a recycling degree of some 90%. Plastics are even more complicated due to the huge diversity of materials and recycling schemes available. For Icelandic purposes it would have been much better to have the list more product oriented, such as "glass bottles", "beverage cartridges", "newspapers and magazines", "scrapped cars", tyres, WEEE, etc. As the list is, it invites some extremely rough and inaccurate estimates to be done. Further explanation of the input data for the benchmarking of Snaefellsnes is given below.

There is no data available for glass recycling in Snaefellsnes, but assuming that glass means drinking bottles, its recycling rate can be assumed to be over 80% as in all other Icelandic communities.

The waste category "paper/card" as defined in the EarthCheck benchmarking software most likely includes three major waste categories, i.e.

- Newspapers and magazines
- Light cardboard and paper beverage
- Cardboard (corrugated)

would be close to 32 kg pr. person.

The total amount of newspapers and magazines wasted annually in Icelandic homes was estimated some years ago by FENÚR, an Icelandic national waste association, to be 176 kg pr. household. However, the economic downturn that hit Iceland especially hard in late 2008 has caused considerable changes in this respect. No new estimates have been published, but a 50% decrease would not be unrealistic, taking into account the disappearance of one of the two former existing free newspapers, less distribution of the other, reduced sizes and most likely a significant reduction in ads. A fair guess for 2014 would be some 90 kg pr. household. Approximately 2.82 persons are living in each household on average, which means that the total paper waste in these categories

The numbers above apply to the capital area of Iceland. The amount is lower in the rural areas because of less distribution of ads and free newspapers. There is no estimation available, but here it is assumed that the amount pr. person in rural areas is some 80% of the amount in the capital area. According to this, the amount in Snaefellsnes might be around 26 kg pr. person pr. year, i.e. some 100 tons for the entire population. The recycling rate cannot be derived from data from the municipalities, but here it is assumed to be ca. 52%.

Light cardboard and paper beverage is estimated to be some 15 kg pr person pr year in the capital area. In that case the amount pr. person should be similar in the rural areas, giving a total estimate of 58 tons for Snaefellsnes. The recycling rate cannot be derived from data from the municipalities, but here it is assumed to be similar as 2008 or ca. 10%.

Some 20,000 tons of corrugated cardboard is annually wasted in the capital area of Iceland, where the number of inhabitants is close to 202,000. This is close to 100 kg pr. capita. Assuming the same applies to other regions in Iceland, the amount for Snaefellsnes should be close to 386 tons. The recycling rate cannot be derived from data from the municipalities, but here it is assumed to be similar as 2008 or ca. 20%.



The waste category Iron & steel (ferrous metals) consists to a major extent of scrapped cars and other vehicle (ELV's). Almost all ELV's are handed in for recycling since a premium was introduced in Iceland some years ago. Thus it can be stated that the recycling rates for metals (ferrous and non-ferrous) in general lies between 80 and 99%, even though no accurate data is available.

The recycling rates for plastics (80%) and green waste (70%) are pure estimates, as there is no reliable data available. However it is known that the recycling rate for green waste in Stykkisholmur and Grundarfjörður is close to 100%.

For the purpose of benchmarking tyres are used here as a synonym for rubber, as data on other potential rubber wastes is not easily available. Wasted tyres in Iceland are estimated to be some 5,000 tons pr. year. Some 1.25% of the Icelandic population is living in Snaefellsnes, and as there are no major differences in car ownership by regions, this gives a reason to estimate that some 62.5 tons of tyres are wasted in the area each year. Available data shows that 22.6 tons of tyres from this area were handed in for recycling in year 2014 or 36% of the estimated total amount, which seems to be a rational recycling rate, bearing in mind that the Icelandic Processing Charge Act, No. 162/2002 assures funding for the collection, transportation and recycling of wasted tyres in Iceland. However, there might be substantial fluctuations in the amounts of tyres handed in from year to year, as some actors might collect and hand in tyres on a biannual basis.

## **Paper Products**

### **3.5 Paper**

The percentage of eco-labelled purchased paper is entered into the benchmarking software according to data from the suppliers of the individual municipalities. This data shows that the purchase of eco-labelled paper is 98.7%.

## **Cleaning Products**

### **3.6 Cleaning**

The percentage of eco-labelled purchased cleaning chemicals is entered into the benchmarking software according to data from the suppliers of each of the individual municipalities. The data shows that the purchase of eco-labelled cleaning chemicals is 50.8%.

## **Pesticide Products**

### **3.7 Pesticides**

Pesticides were not used in large amount in 2013. Detailed data is not available but the municipalities are working on implementing a registration system for the use of pesticides in the area.

## **Sector Specific Indicators**

### **3.8.1 CO<sub>2</sub> – Equivalents**

Estimation of the CO<sub>2</sub> production was derived from Earth Check's Energy Calculator. The total CO<sub>2</sub> production due to the community's energy consumption was estimated to be 18,052 tonnes. The total CO<sub>2</sub> production due to waste indirect emissions was estimated to be 1,414 tonnes. Thus the total estimate is 19,466 tonnes.

### **3.8.2 Air Quality – Nitrous Oxides**

No monitoring of air quality, i.e. of NO<sub>x</sub>, SO<sub>2</sub> and PM10, is done in Snaefellsnes. The calculation of air quality should therefore preferably be done by EarthCheck. The input for this calculation can be taken directly from Table 3. Land based industry in Snaefellsnes does not consume fossil fuels, except from agriculture which is included in Table 3.

In spite of all efforts to provide data for calculation of air quality, it has to be mentioned as before that the relevance of any such measurements or estimations for the Snaefellsnes community is questionable from a sustainability point of view. The total area of the Snaefellsnes community is 1,479 km<sup>2</sup> and the number of inhabitants 3,859 or 4,416 if tourists are included. This gives a population density of less than 3 pr. km<sup>2</sup>. The highest density is to be found in the town Stykkisholmur with its 1,100 inhabitants. In addition to this the Snaefellsnes peninsula is known to be one of the windiest places in Iceland, as explained in the benchmarking comments for Snaefellsnes in spring 2006.

In the online benchmarking software the digit “1” has been filled in for “Air Quality – Nitrous Oxides” to allow submitting.

### **3.8.3 Air Quality – Sulphur Dioxide**

See above. In the online benchmarking software the digit “1” has been filled in for “Air Quality – Sulphur Dioxide” to allow submitting.

### **3.8.4 Air Quality – Particulate Matter**

See above. In the online benchmarking software the digit “1” has been filled in for “Air Quality – Particulate Matter” to allow submitting.

### **3.8.5 Waterways Quality**

In 2014, all tested waterways samples passed quality standards according to information from the regional health surveillance authority.

### 3.8.6 Habitat Conservation

The total area of the Snaefellsnes community is 1,479 km<sup>2</sup> according to data from The National Land Survey of Iceland (Landmælingar). Snaefellsjökull National Park covers 170 km<sup>2</sup> thereof. In addition to that, the following areas are designated for conservation:

- ☐ The nature reserve in Budahraun (lava field)
- ☐ The nature reserve from Arnarstapi to Hellnar and the natural monument Bardarlaug. This area and Budahraun is in total approximately 30 km<sup>2</sup>.
- ☐ The nature reserve Melrakkaey off Grundarfjörður, approximately 0.15 km<sup>2</sup>.
- ☐ Other islands off Grundarfjörður and Stykkisholmur, in total approximately 5 km<sup>2</sup>.
- ☐ The Coastline from Vallabjarg to Alftafjörður (on the north side of the peninsula), total length estimated 200 km, average width estimated 10 m, thus in total approximately 2 km<sup>2</sup>.

The total area designated for conservation is, according to the above measurements and assumptions, approximately 207 km<sup>2</sup>, which is 14% of the total area of the community. This might however be underestimated, which inter alia relies on the accuracy of the estimated width of the coastline area. To ensure comparability same approach is used as before.

### 3.8.7 Green Space

The online benchmarking software has a cell for “Green Space area of community” as a proportion of the total community area. It is questionable if this parameter is based on the EarthCheck Community Standard at all. The definition of “Green Space” also seems to be missing from the available guidance material. Furthermore this emphasis on “Green Space” might be questioned from biodiversity/sustainability point of view, especially in sparsely populated areas, depending though on the missing definition. In the case of Snaefellsnes it should be kept in mind, as mentioned in the section on air quality, that the area is sparsely

populated with its 1,479 km<sup>2</sup> and 3,933 inhabitants, giving less than 3 people/km<sup>2</sup>. Furthermore more than 3,700 of the 3,933 inhabitants are living in the three towns of Stykkisholmur, Grundarfjörður and Olafsvík and the two smaller villages of Hellissandur and Rif. This implies that the vast majority of the total area, most likely some 1,400 km<sup>2</sup> is hosting only around 200 inhabitants. In that sense almost the whole area is an open space and any efforts to develop “Green Spaces” would imply interference with nature, practically untouched for centuries.

In the online benchmarking software “99%” has been filled in for ‘Green Space’ to allow submitting.

### 3.8.8 Travel & Tourism Accreditation

By the end of year 2014, 1 of 75 Travel and Tourism operators in Snaefellsnes (1.3%) was environmentally accredited.



## Optional Indicators

### 4. Optional Indicators

The Snaefellsnes community has selected two optional indicators as being accessible and relevant for the community. These are Renewable energy consumption (Operation Selected) and Renewable energy production within community (Operation Specified).

#### 4.1 Renewable Energy Consumption

As shown in table 3, 68% of the total energy consumption in Snaefellsnes 2014 came from renewable energy sources (hydro and geothermal)

#### 4.2 Renewable Energy Production

At the end of year 2014 seven relatively small hydropower plants were operated within the Snaefellsnes community. The energy production of these is shown in table 8. The plants at Olafsvik, Mulavirkjun and Grisholl produce power to the national grid, while the energy from the four smaller farm-owned plants is consumed locally. By Stykkisholmur there is a geothermal well, providing the town with water for heating as well as for the local swimming pool. Two smaller geothermal wells are being harnessed for heating and drying of barley in the countryside at the southern part of the peninsula.

The renewable energy production within the community in 2014 was 38% of the total energy consumption.

Local Energy Production in Snaefellsnes 2014		
	kWh/year	MJ/year
Olafsvik (hydropower)	10.717.919	38584508,4
Mulavirkjun (hydropower)	12.911.511	46481439,6
Knarrartunga (hydropower)	0	0
Thvera both stations (hydropower)	168.000	604800
Hjardarfell (hydropower)	73.400	264240
Grisholl (hydropower)	4.198.891	15116007,6
Stykkisholmur (geothermal)	43.126.100	155253960
Eyja- og Miklaholtshr, (geothermal)	6.064.640	21832704
Dalsmynni (geothermal)	3.066.000	11037600
<b>Total</b>	<b>80.326.461</b>	<b>289.175.260</b>
<b>Total Energy Consumption</b>	<b>(Table 3)</b>	<b>758.379.774</b>
<b>Renewable Local Energy Production/ Total Energy Consumption</b>		<b>0,381306661</b>

Table 8. Local Renewable Energy Production in Snaefellsnes 2014

## WATER SAVINGS RATING

The Benchmarking Assessors advised that **Not Relevant** indicates that this water saving measure is not used within the community, whereas **Relevant** indicates that these measures

are used. Therefore clarification was requested to confirm whether the water saving measures should be updated to 'Relevant / Not Available' for the 2014 benchmarking period.

The **Snaefellsnes Peninsula** advised:

*"This should be Relevant/Not Available in all cases. Thank you for pointing this out to me!"*

Therefore the updated data for *Water Savings Rating* can be found below:

Water Savings Measures	Frequency / Percentage Rating
Check for leaks	Relevant / Not Available
Low/dual flush toilets	Relevant / Not Available
Low flow tap fittings	Relevant / Not Available
Low flow shower fittings	Relevant / Not Available
Water sprinklers used after dark	Relevant / Not Available
Minimal irrigation landscaping	Relevant / Not Available
Use of recycle/grey/rain water	Relevant / Not Available

This gives an overall rating of 50.0 Points.

### WASTE SENT TO LANDFILL

The submitted value of 1 178 782 kg of waste (specified by the operator as uncompacted waste) has been converted into a volume by using the standard conversion of: 1 kg (uncompacted waste) = 0.00333333 m<sup>3</sup> or 3.33333 L (i.e. 1 178 782 kg x 0.00333333 = 3 929.3 m<sup>3</sup>). (If the waste is compacted, then the standard conversion is: 1 kg = 0.00153846 m<sup>3</sup>).

This equates to 0.9 m<sup>3</sup> per *Person Year*.

### PAPER PRODUCTS RATING

The Benchmarking Assessors sought clarification with regards to the *Paper Products Rating* as 'Serviettes' was listed as "Not Relevant / Available" however in the previous assessment this was reported as "100%", and the percentage submitted for 'Office paper' was less than expected.

The **Snaefellsnes Peninsula** advised (highlighted yellow):

Paper Products Measures	Is the paper product type used in your operation?	Is this product available as an ecolabelled or made from recycled materials in your area?	What proportion of this paper product does your operation use that is ecolabelled or made from recycled materials?
Office paper	Yes	Yes (except for photographic paper which is why it is not 100%)	90.3%
Serviettes	No (there is no record of this type of paper being bought in the year 2014)	Yes / No	?%

Therefore the data initially submitted for *Paper Products Rating* remained unchanged.



## CLEANING PRODUCTS RATING

The Benchmarking Assessors sought clarification with regards to the *Cleaning Products Rating* as the data submitted differed considerably to the previous assessment.

The **Snaefellsnes Peninsula** advised (highlighted yellow):

Cleaning Products Measures	Is the cleaning product type used in your operation?	Is this type of eco-labelled or biodegradable cleaning product available in your area?	Percentage of this cleaning products used that is eco-labelled or biodegradable
Hard floor cleaners	Yes	Yes and no (the biggest part of these cleaners is floor polish which is not available biodegradable)	17,4%
Carpet cleaners	No not in the year 2014	Yes / No	?%
Glass cleaners	Yes (a very small proportion of cleaning products)	Yes	84.6%
Personal hygiene	No there is no record of soaps and shampoos bought in the year 2014	Yes / No	?%

Therefore the updated data for *Cleaning Products Rating* can be found below:

Cleaning Products Measures	Frequency / Percentage Rating
Hard floor cleaners	1-19%
Carpet cleaners	Not Relevant / Available
Interior surface cleaners	40-59%
External surface cleaners	Not Relevant / Available
Glass cleaners	80-99%
Detergents	60-79%
Personal hygiene	Not Relevant / Available

This gives an overall rating of 83.1 Points which has been used throughout the benchmarking assessment.



**EARTHCHECK**

**Benchmarks Assessed by EarthCheck**

# SUMMARY OF SUPPLIED BENCHMARKING DATA

## Activity Measures

Person Years	4416
Total Destination Area	147900

## Supplied Benchmarking Data

### Energy

#### Energy Consumption (GJ / Person Year)

Supplied	779457.7 GJ
Calculated	176.5 GJ / Person Year
Baseline	380 GJ / Person Year
Best Practice	266 GJ / Person Year
Difference	33.6% better than the Best Practice level

#### Green Power (%)

Supplied	N/A
Calculated	N/A

#### Greenhouse Gas Emissions (Scope 1 and Scope 2) (t CO<sub>2</sub>-e / Person Year)

Supplied	18051.6 t CO <sub>2</sub> -e
Calculated	4.1 t CO <sub>2</sub> -e / Person Year
Baseline	8.6 t CO <sub>2</sub> -e / Person Year
Best Practice	6.0 t CO <sub>2</sub> -e / Person Year
Difference	31.7% better than the Best Practice level

#### Direct Emissions (Scope 1) (t CO<sub>2</sub>-e / Person Year)

Supplied	18024.4 t CO <sub>2</sub> -e
Calculated	4.1 t CO <sub>2</sub> -e / Person Year

#### Indirect Emissions (Scope 2) (t CO<sub>2</sub>-e / Person Year)

Supplied	27.29 t CO <sub>2</sub> -e
Calculated	0.006 t CO <sub>2</sub> -e / Person Year

#### Indirect Emissions (Scope 3) (t CO<sub>2</sub>-e / Person Year)

Supplied	1414.5 t CO <sub>2</sub> -e
Calculated	0.32 t CO <sub>2</sub> -e / Person Year

#### Transport Indirect Emissions (Scope 3) (t CO<sub>2</sub>-e / Person Year)

Supplied	0.0 t CO <sub>2</sub> -e
Calculated	0.0 t CO <sub>2</sub> -e / Person Year

#### Waste Indirect Emissions (Scope 3) (t CO<sub>2</sub>-e / Person Year)

Supplied	1414.5 t CO <sub>2</sub> -e
Calculated	0.32 t CO <sub>2</sub> -e / Person Year

### Water

#### Potable Water Consumption (kL / Person Year)

Supplied	2817852.0 kL
Calculated	638.1 kL / Person Year
Baseline	1200 kL / Person Year
Best Practice	840 kL / Person Year
Difference	24.0% better than the Best Practice level

#### Recycled / Captured Water (%)

Supplied	0%
Calculated	0%

#### Water Savings Rating (Points)

Supplied	50.0 Points
Calculated	50.0 Points
Baseline	50 Points
Best Practice	80 Points
Difference	at the Baseline level

### Waste

#### Waste Sent to Landfill (m<sup>3</sup> / Person Year)

Supplied	3929.3 m <sup>3</sup>
Calculated	0.9 m <sup>3</sup> / Person Year
Baseline	2.66667 m <sup>3</sup> / Person Year
Best Practice	1.86667 m <sup>3</sup> / Person Year
Difference	52.3% better than the Best Practice level

#### Recycled / Reused / Composted Waste (%)

Supplied	42.5%
Calculated	42.5%

#### Waste Recycling Rating (Points)

Supplied	78.2 Points
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Calculated	78.2 Points
Baseline	50 Points
Best Practice	80 Points
Difference	28.2 Points better than the Baseline level

## Paper

### Paper Products Rating (Points)

Supplied	97.2 Points
Calculated	97.2 Points
Baseline	50 Points
Best Practice	80 Points
Difference	17.2 Points better than the Best Practice level

## Cleaning

### Cleaning Products Rating (Points)

Supplied	83.1 Points
Calculated	83.1 Points
Baseline	50 Points
Best Practice	80 Points
Difference	3.1 Points better than the Best Practice level

## Pesticides

### Pesticide Products Rating (Points)

Supplied	100.0 Points
Calculated	100.0 Points
Baseline	50 Points
Best Practice	80 Points
Difference	20.0 Points better than the Best Practice level

## Sector Specific

### Nitrous Oxides Produced (kg / Person Year / Hectare)

Supplied	135695.08 kg
Calculated	0.98 kg / Person Year / Hectare
Baseline	0.93 kg / Person Year / Hectare
Best Practice	0.65 kg / Person Year / Hectare
Difference	5.4 % below the Baseline level

### Sulphur Dioxide Produced (kg / Person Year / Hectare)

Supplied	10892.50 kg
Calculated	0.22 kg / Person Year / Hectare
Baseline	0.90 kg / Person Year / Hectare
Best Practice	0.63 kg / Person Year / Hectare
Difference	65.1% better than the Best Practice level

### Particulate Matter Produced (kg / Person Year / Hectare)

Supplied	486394.14 kg
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Calculated	0.02 kg / Person Year/ Hectare
Baseline	0.10 kg / Person Year / Hectare
Best Practice	0.07 kg / Person Year / Hectare
Difference	71.4% better than the Best Practice level

## Water Samples Passed (%)

Supplied	100%
Calculated	100%
Baseline	70 %
Best Practice	100 %
Difference	at the Best Practice level

## Habitat Conservation Area (%)

Supplied	14.0%
Calculated	14.0%
Baseline	10 %
Best Practice	15 %
Difference	4.0% better than the Baseline level

## Green Space (%)

Supplied	99.0%
Calculated	99.0%
Baseline	15 %
Best Practice	20 %
Difference	79.0% better than the Best Practice level

## Accredited Operations (%)

Supplied	1.3%
Calculated	1.3%
Baseline	5 %
Best Practice	6.5 %
Difference	3.7% below the Baseline level

## DETERMINATION OF BASELINE AND BEST PRACTICE LEVELS

### General

The values for the Baseline and Best Practice levels for each indicator are derived from extensive worldwide research into available and appropriate case studies, industry surveys, engineering design handbooks, energy, water and waste audits, and climatic and geographic conditions.

National and regional data for per capita energy use, greenhouse gas and other emissions, wastes to landfill and water consumption, where available provide background data for normalisation of the expected performance values for per customer or employee, and/or overall performance of an enterprise being benchmarked. They are used to gauge the regional or national situation and environmental performances that an enterprise is based in, and hence what are reasonable levels to expect the enterprise to achieve.

A benchmarking result at, or above, the Baseline level demonstrates to all stakeholders that the enterprise is achieving above average performance. A result below the Baseline level indicates that an enterprise can and should carry out actions that will make beneficial improvements in performance.

### Consideration of Climate

A major determinant of energy consumption in some sectors, primarily those centred on buildings such as accommodation, visitor centres and administration offices will be the dominant climatic conditions in which the enterprise is located. In general, to maintain the same level of indoor comfort, enterprises operating in hot or cold climates will consume more energy than those in temperate climates.

Similarly, it is recognised that in certain sectors a major determinant of potable water consumption will be the climate in which an enterprise is located, in particular those with large grounds and/or significant water-based facilities or activities. That is, enterprises located in hot climates are more likely to consume more potable water than equivalent ones located in cooler climates. Factors that are likely to lead to a higher level of potable water consumption, for example in the accommodation sector, include increased evaporation rates of swimming pools, personal bathing and irrigation demands of grounds. In consideration of this factor, Baseline and Best Practice levels can vary in relation to country location.

### Waste Sent to Landfill

The benchmark indicator used for Waste Sent to Landfill is given in litres as waste bins are usually calibrated by volume, and it has been found that the majority of operations do not have access to the weight of material disposed of. However, if a weight is supplied, standard factors are used to convert from weight (e.g., kilograms (kg)) to volume (e.g., cubic metres (m<sup>3</sup>) or litres (L)). These are: 1 kg (uncompacted waste) = 0.00333333 m<sup>3</sup> or 3.33333 L and 1 kg (compacted waste) = 0.00153846 m<sup>3</sup> or 1.53846 L.

Operations should make note of the level of compaction when submitting data for assessment by EarthCheck.

### Review of Performance Levels

The Baseline and Best Practice performance levels for EarthCheck indicators are continuously reviewed and are likely to change over time. This review by a team of international experts, takes into account "business-as-usual" changes in practices, equipment and facilities, as well as regulations and general improvement trends in performance and procedures. This review is used to update the levels of Baseline and Best Practice, and provides useful feedback to the user of the indicators.

The list below summarises the basic generic rules used to determine Baseline and Best Practice levels for EarthCheck indicators.

- If relevant enterprise sector specific case studies are not available for a type of activity in a designated region, then national averages will be used to ascertain the Baseline level. In this case, the Best Practice level will be set at a minimum of 30% better performance than the Baseline.
- If case study or national data are not available for a specific indicator, then the first enterprise that benchmarks will have its results set as 15% better than Baseline (i.e., half way between Baseline and Best Practice).