

## **BUSINESS CARBON FOOTPRINT REPORT**

### **UK-NSI Co.,Ltd.**

**Merse Road,  
North Moons Moat  
Redditch, Worcs  
B98 9HL**

**Unit 26 & 27 Manorside Estate,  
Eagles Road,  
Redditch, Worcs  
B98 9HD**



**Prepared By: Ken Wilkes  
Date of Report: 14th August 2018.**

**REPORTING PERIOD: Calendar Year – 1<sup>st</sup> January to 31<sup>st</sup> December 2017**

# UK-NSI Carbon Footprint Report

## ACKNOWLEDGEMENTS

It must be recognised and acknowledged that without the all year round support and work by individuals and functions within UK-NSI, a carbon footprint and measured performance would not be possible.

It is therefore important for the author of this carbon footprint to say thank you to:

- All the essential individuals and functions who have positively contributed and assisted with the collection and supply of relevant data and additional information.
- Those individuals who have had to suffer the author as he clarified data, insisted on double checking, changed systems and data requirements, and resolved issues.
- Scott Gourlay for his patience, assistance and willingness to act as a sounding board for the author as he endeavoured to compile and report his first carbon footprint.
- The HR team who have had to listen to the authors frustrations in his efforts to improve and further develop systems and information, and of course the constant technical alien languages he spoke throughout the duration of compiling the carbon footprint.

## CONTENTS

Acknowledgements	Page(s)	2
Contents	Page(s)	2
Executive Summary	Page(s)	3/4
Introduction	Page(s)	5
Scope	Page(s)	5/6
Methodology & Recalculation	Page(s)	6/7
Results	Page(s)	8/9/10/11
Analysis & Comparisons	Page(s)	12/13/14/15/16
Conclusions	Page(s)	17
Recommendations	Page(s)	18
References	Page(s)	18

# UK-NSI Carbon Footprint Report

## EXECUTIVE SUMMARY

UK-NSI carbon footprint is as follows:

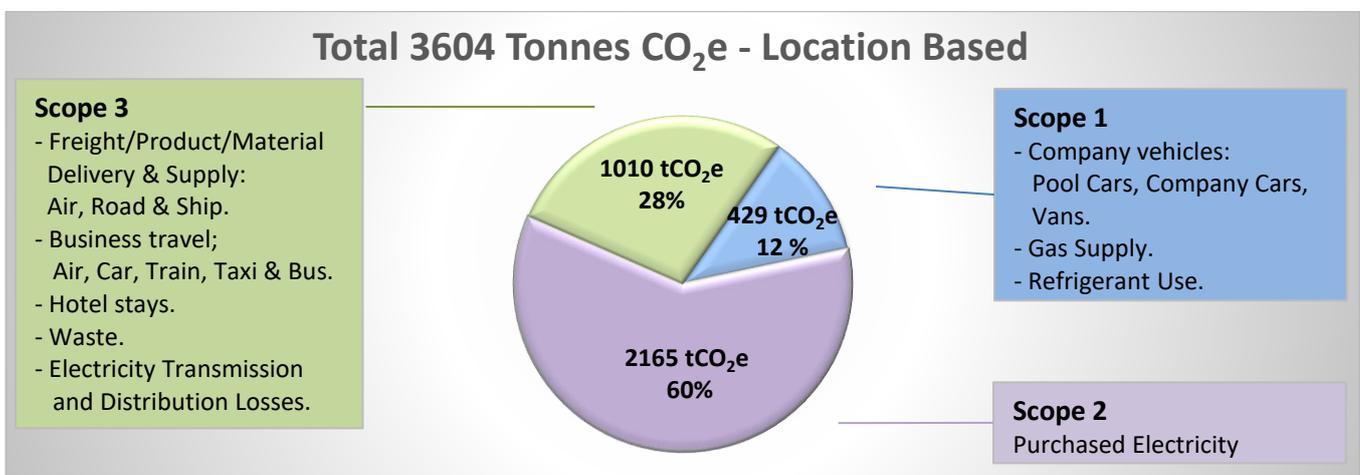
UK-NSI's carbon footprint is focused on a location based approach, however this report also includes market based information to show a different approach to reporting and how the results can vary.

The difference between Location & Market based reporting is electricity (scope 2) where the carbon emissions for electricity are calculated in two different ways:

Location based = Carbon emissions for electricity based on general conversion factors for the area or country (UK) that generated and supplied it.

Market based = Carbon emissions supplied directly from the electricity supplier, which takes into account the specific mix of what makes up the electrical supply and includes all sources, i.e. renewables/green energy, etc.

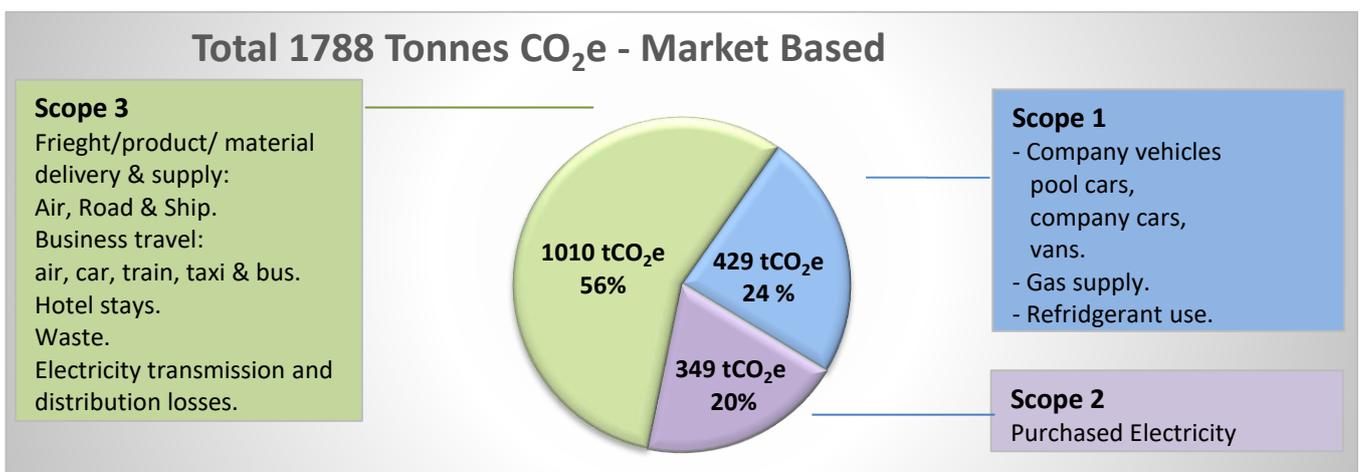
### 2017 Total CO<sub>2</sub>e By Scope - Location based



A decrease of 410.9 tonnes (10.2%) CO<sub>2</sub>e compared against 2016 data.

An increase of 237.5 tonnes (7%) CO<sub>2</sub>e when compared to the 2011 base year data.

### 2017 Total CO<sub>2</sub>e By Scope - Market Based

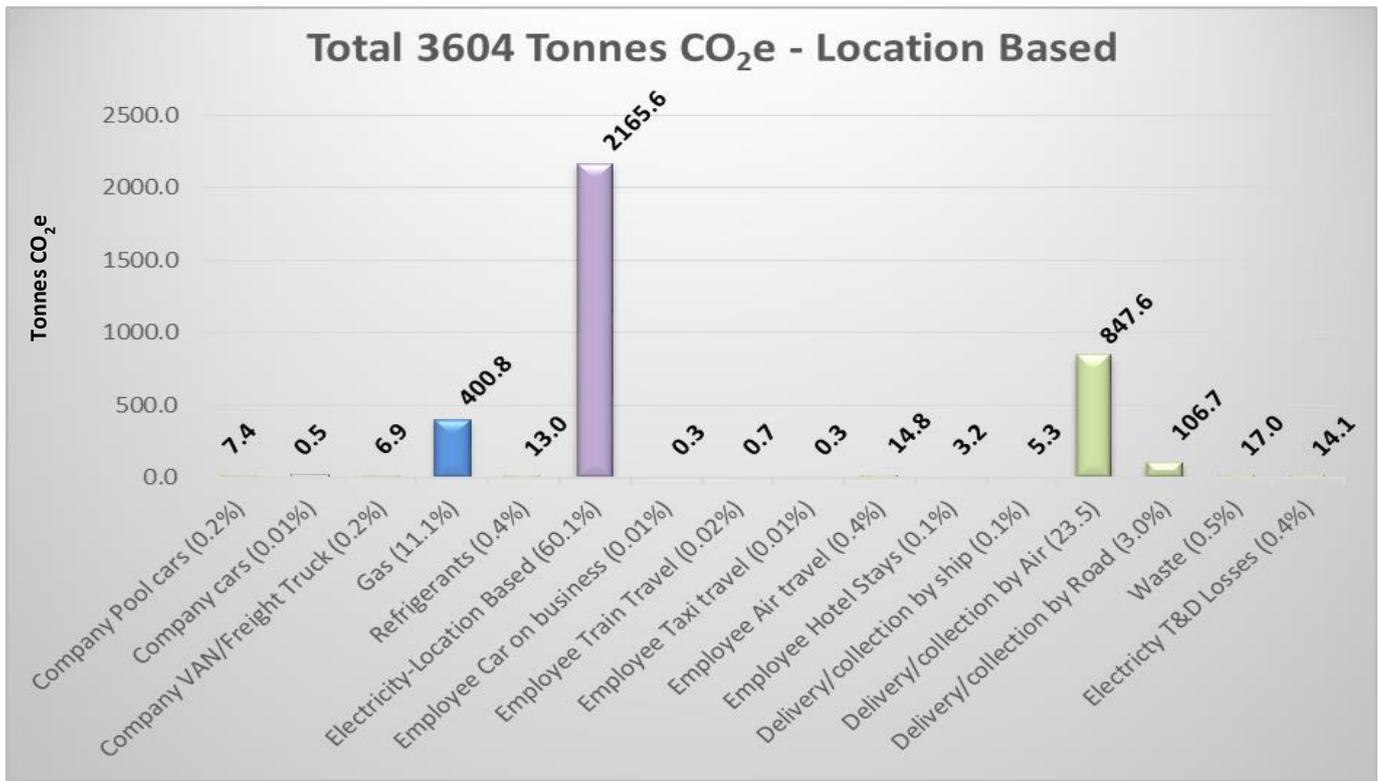


A decrease of 260 tonnes (13%) CO<sub>2</sub>e compared against 2016 data.

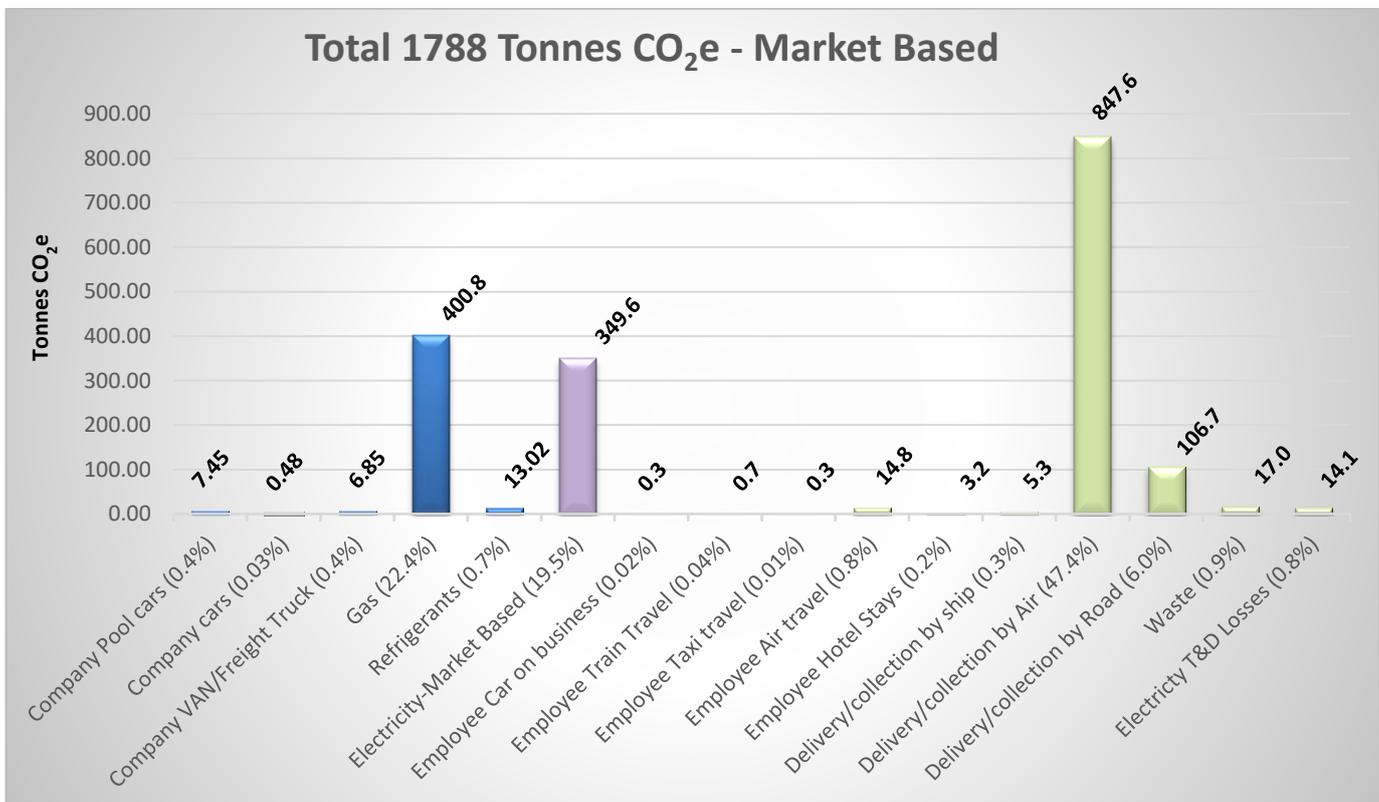
No market based data available for 2011 base year data.

# UK-NSI Carbon Footprint Report

## 2017 Total CO<sub>2</sub>e By Activity – Location Based



## 2017 Total CO<sub>2</sub>e By Activity – Market Based



As can be seen by changing the approach it can have significant impacts on the carbon footprint results.

# UK-NSI Carbon Footprint Report

## INTRODUCTION

UK-NSI is the European manufacturing centre of Nippon Seiki, a Japanese company which specialises in the supply of high-technology instruments and Driver Information Systems to the automotive and motorcycle markets.

Established in the Redditch area of Worcestershire in 1988, UK-NSI is a medium sized company producing approximately 1.4 million instruments per year and generating an annual revenue around £90 million. Products are supplied to leading automotive vehicle manufacturers in the UK and mainland Europe, among them JLR, BMW, Honda, Daimler, PSA and Triumph Motorcycles

The Main UK-NSI site operations are based on Merse road, whilst other operations for Low Volume Manufacture & Spares was based in units 26 & 27 Manorside, see addresses on cover. Manorside units were a short term lease that has now come to an end.

This carbon footprint is calculated with the inclusion of both UK-NSI addresses, Merse Road and Manorside.

As part of UK-NSI's overall environmental policy, 'Environmental' has been given the responsibility to calculate, as accurately as possible, the carbon emissions associated with the operations of UK-NSI Co.,Ltd. There are two primary teams set up, firstly the Environmental Steering Team (EST), who look after overall Environmental Management System (EMS) activities, this is supported by the GHG Data Collection Team (DCT) who are is responsible for routine collection of GHG data.

## SCOPE

This carbon footprint reports on UK-NSI results for the period 1<sup>st</sup> January to 31<sup>st</sup> December 2017 and benchmarks against the previous year 2016 and UK-NSI's base year 2011. It calculates the business carbon footprint in terms of tonnes of carbon dioxide equivalent (tCO<sub>2e</sub>) emissions.

**Scope:** This report only applies to UK-NSI Co.,Ltd activities and therefore excludes other companies within the Nippon Seiki group. Only applicable to the two addresses shown on the front page of this report.

**Organisational Boundaries:** A significant proportion of UK-NSI's operational activities takes place on its main site on Merse Road, which was supported by operations in the nearby units on Manorside. Some activities are also performed off-site, i.e. business trips, etc, only activities that the company has financial/operational control are included within the scopes of this Green House Gas (GHG) report.

**Operational Boundaries:** Organisational Boundaries as stated above apply. UK-NSI has identified and categorised UK-NSI's operations into 3 scopes 'Direct Emissions' (Scope-1), 'Energy-Indirect Emissions' (Scope-2), and 'Other Indirect' Emissions (Scope-3). The three Categories are clearly identified and explained throughout this report.

## UK-NSI Carbon Footprint Report

Scope-1	Scope-2	Scope-3
Pool Car Usage	Purchased Electricity	Employee Business Travel
Company Car Usage		Employee Hotel Stays
Freight Truck/VAN Use		Freight Transport
AC Refrigerants		Waste
Gas Boiler & Kitchen use (combustion)		Electricity Transmission & Distribution (T&D) losses
<b>Direct emissions</b> Direct emissions resulting from activities within the organisation's control. Includes on-site fuel combustion, refrigerant losses and company vehicles.	<b>Indirect emissions: Electricity and Heat</b> Indirect emissions from electricity, heat or steam purchased and used by the organisation.	<b>Indirect emissions: other</b> Any other indirect emissions from sources not directly controlled by the organisation. Examples include: employee business travel, outsourced transportation, waste disposal, electrical T&D losses. This report excludes employee commuting (to/from work) as this is not directly paid for by the company. It is considered to be part of an individual's own impact and therefore avoids double counting.

**Exclusions:** CO2 Fire Extinguishers: There is an annual release from 12 Extinguishers with a capacity of 2kg of CO2 each, that results in 24kg CO2 or 0.024 tonnes CO2. Due to its low impact and in-significance to the overall GHG activities, these are excluded from reporting.

Freight Transport that is directly paid for by UK-NSI is included, but excludes freight transport that other group companies or the supply-chain are responsible for.

**2017 Changes and additions in scopes:** Scope 3 – It has been possible to identify employee vehicles used on company business that would have been included scope 1 and therefore they are now reported under scope 3 in this carbon footprint. This a low impact change in the location based CO<sub>2e</sub> of 0.01%.

Scope 3 – Electricity supply transmission and distribution losses have been added in this carbon footprint for the first time. This is also a low impact change in the location based CO<sub>2e</sub> of 0.39%.

Although the above changes are deemed to be within the significant threshold of 10%, if it becomes necessary to undertake a recalculation, these variations should be included in the recalculation wherever possible.

### METHODOLOGY & RECALCULATION

The GHG accounting and reporting approach undertaken in this report follows the guidance and principles set out by the "Greenhouse Gas Protocol Corporate Accounting and Reporting Standard" (GHG Protocol) and the Department for Environment, Food and Rural Affairs (DEFRA) for corporate reporting. These are the most widely used and accepted methods for conducting corporate carbon footprints.

The GHG Protocol requires emissions to be reported against the three different "scopes" Listed under the Kyoto Protocol, as CO<sub>2</sub>, the six greenhouse gases determined at Kyoto (Methane, Nitrous Oxide, Hydro fluorocarbons, Per-fluorocarbons, Sulphur Hexafluoride and Carbon Dioxide) all have a different potential for global warming. A common unit of carbon dioxide equivalent (CO<sub>2e</sub>) is used.

# UK-NSI Carbon Footprint Report

---

Carbon conversion factors have been determined by a number of sources. Those published by DEFRA or GHG Protocol are the most commonly used in the UK and have been used in this report, however supplier factors are also included.

UK-NSI aims to report on the above gases as accurately as possible, and have experienced that the GHG protocol tools do not include the methane and nitrous oxide elements. UK-NSI has historically chosen to use a combination of inputs to determine the gases, and focused on the GHG Protocol tools as the primary ones to use. To ensure a benchmark against the previous 2016 carbon footprint UK-NSI has chosen to use the same conversion factors and tools for its 2017 carbon footprint. However, it has been noted that DEFRA releases updated conversion factors more frequently and going forward UK-NSI will adopt these as the primary conversion factors to use. This may initiate a recalculation of UK-NSI's carbon footprint and base year data.

Quantification Methodology in most cases is achieved by calculation derived from source data. The source data is converted into the required unit of measurement, and then multiplied by the relevant emission factors. This would be achieved by using recognised standard tools such as GHG-Protocol, DEFRA, etc.

## **UK-NSI Carbon Footprint Recalculation Policy**

Base year recalculation shall be applied for external reporting purposes.

### **Determining the base year**

UK-NSI's carbon footprint base year is the Calendar year, 1<sup>st</sup> January to 31<sup>st</sup> December 2011 as this was the first year of reliable data and marked the start of the Environmental GHG activity for UK-NSI. The base year is applicable to Scopes 1,2 and 3 emissions.

### **Recalculating the base year Significance threshold**

A significance threshold is used to determine when historic emissions should be recalculated. A significance threshold is a qualitative and/or quantitative criteria used to define any significant change to the data, inventory boundaries, methods or other relevant factors.

Fluctuations in natural or influenced changes in the business, e.g the need for increased air-freight due to product development, etc, will not initiate a recalculation. However, if the reliability of data or accuracy of data is brought into question and is greater than a threshold of 10%, it should be investigated, explained and recalculation considered. This also applies to changes in methodology used to calculate the carbon footprint which has an impact greater than 10%.

**2016 market based electricity data** – A recalculation of the 2016 market based electricity data was necessary to enable a benchmark with 2017 market based data due to an error in the calculation greater than 10%. Market based data was not calculated in the base year 2011 and therefore comparisons cannot be made. All market based information in this report are based on recalculated 2016 data.

**Scope 2 Market based Reporting** - UK-NSI have included both 'Location' and 'Market' based emissions to show the difference results from the two approaches. However, UK-NSI will focus and complete all analysis based on the 'Location' based approach. This is primarily due to the consistency, historical reporting, possible comparisons and availability of factor information being more reliable for location based. This may be reviewed in the future.

# UK-NSI Carbon Footprint Report

## 2017 RESULTS

### Scope – Carbon Footprint Summary Table

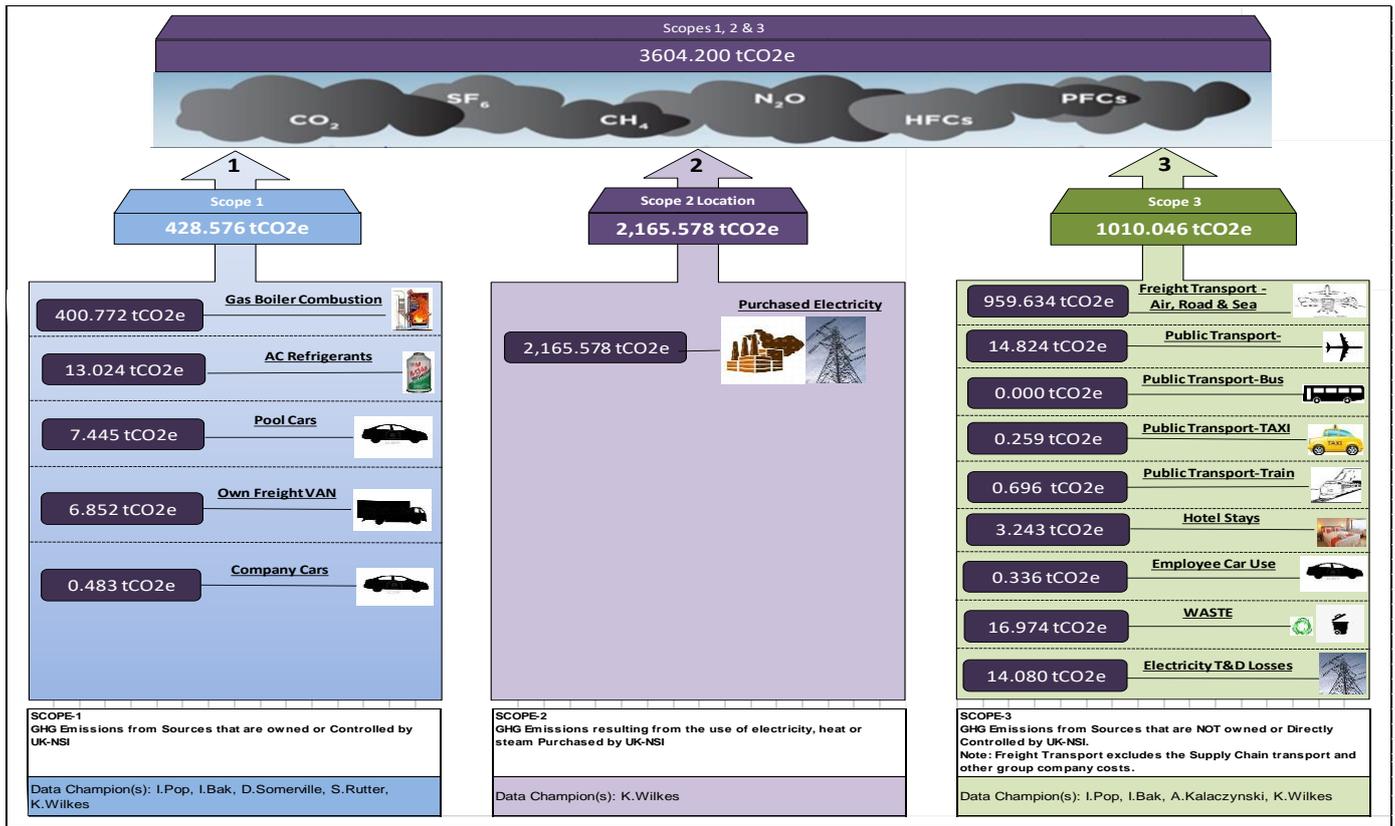
Table 1

UK-NSI Co Ltd: GHG Scope Summary		Owner	Ken Wilkes	Date	14/08/2018	Ref: QP-060-030, ISO 14064-1.					
Year	2017 (Calendar Year)	DEFDEC=Defra Decc, GHGP=GHG Protocol, SUPP=Supplier Factor			CO <sub>2</sub>	SF6	CH <sub>4</sub>	N <sub>2</sub> O	HFC's	PFC's	CO <sub>2</sub> e
Scope	Description	Quantity of Activity	Units	Calc Tool	tonne	kg	kg	kg	tonne	tonne	Metric Tonnes
Scope-1	UK-NSI Generated Electricity	0.00	MWh	N/A	0	0	0	0	0	0	0
	UK-NSI Generated Steam	0.00	MWh	N/A	0	0	0	0	0	0	0
	Fuel consumed for vehicles controlled/owned by the company-Pool cars	23,912.00	Miles	GHGP	7.445	0	0	0	0	0	7.45
	Fuel consumed for vehicles controlled/owned by the company-Company cars	1,472.00	Miles	GHGP	0.483	0	0	0	0	0	0.48
	Fuel consumed for vehicles controlled/owned by the company VAN/Freight Truck	16,976.00	Miles	GHGP	6.852	0	0	0	0	0	6.85
	Fuel Combustion-Boilers Use plus Kitchen.	2,202.94	MWh	GHGP	400.383	0	0.0071	0.00071	N/A	N/A	400.77
	Refrigerants (Fugitive Emissions)	7.55	MWh	GHGP	13.02375	0	N/A	N/A	13.02375	0	13.02
Scope-2	Purchased Electricity-Location Based	4,481.71	MWh	GHGP	2148.885	0	3.81914	12.8742	N/A	N/A	2165.58
	Purchased Electricity-Market Based	4,481.71	MWh	SUPP	349.574	0	0	0	N/A	N/A	349.57
Scope-3	Employee Car on company business	1,055.00	Miles	GHGP	0.336	0	0	0	0	0	0.336
	Employee Train Travel	4,633.87	Miles	GHGP	0.687	0	0.014	0.03	0	0	0.696
	Employee Taxi travel	1,058.13	Miles	GHGP	0.256	0	0.006	0.009	0	0	0.259
	Employee Bus travel	0.00	Miles	GHGP	0	0	0.00000	0.00000	0	0	0.000
	Employee Air travel	109,294.15	Miles	GHGP	14.824	0	0	0	0	0	14.824
	Employee Hotel Stays	87 nights	kg CO <sub>2</sub>	GHG Gov	3.243	0	0.00000	0.00000	0	0	3.243
	Electricity T&D Losses	214.837	MWh	SUPP	7.062	0	7.00580	0.01290	0	0	14.080
	Material delivery/collection by ship (Logistics)	160,490.00	km - tonne	GHGP	5.276	0	0.451	0.154	0	0	5.330
	Material delivery/collection by Air (Logistics)	1,355,883.00	km - tonne	GHGP	834.741	0	38.727	44.485	0	0	847.614
	Material delivery/collection by Road (Logistics)	523,024.80	km - tonne	GHGP	106.398	0	1.254	0.967	0	0	106.690
	Batteries	0.400	tonne	GHGP	0.026	N/A	N/A	N/A	N/A	N/A	0.026
	Waste-Scrap Metal	72.270	tonne	GHGP	1.575	N/A	N/A	N/A	N/A	N/A	1.575
	Waste-Commercial/Industrial	282.923	tonne	GHGP	8.947	N/A	N/A	N/A	N/A	N/A	8.947
	Waste-Paper/Cardboard	129.710	tonne	GHGP	2.828	N/A	N/A	N/A	N/A	N/A	2.828
	Waste-Plastics	85.900	tonne	GHGP	1.873	N/A	N/A	N/A	N/A	N/A	1.873
	Waste-WEEE Small	9.728	tonne	GHGP	0.212	N/A	N/A	N/A	N/A	N/A	0.212
	Waste-Wood	69.420	tonne	GHGP	1.513	N/A	N/A	N/A	N/A	N/A	1.513
Totals	Scope-1	Direct Emissions			428.18675	0	0.00714	0.000714	13.02375	0	428.576
	Scope-2-Location Based	In-Direct Emissions			2148.885	0.000	3.819	12.874	N/A	N/A	2165.578
	Scope-2-Market Based	In-Direct Emissions			349.574	0.000	0.000	0.000	N/A	N/A	349.574
	Scope-3	Other Emissions			989.7967	0	47.4578	45.6579	0	0	1010.046
	ALL Scopes-Location Based	Combined Emissions			3566.868	0.000	51.284	58.533	13.024	0.000	3604.200
	ALL Scopes-Market Based	Combined Emissions			1767.557	0.000	47.465	45.659	13.024	0.000	1788.196
	Carbon Off-set Purchases from market										0
<b>Company Total Carbon Footprint-Location Based</b>											3604.20
<b>Company Total Carbon Footprint-Market Based</b>											1788.20

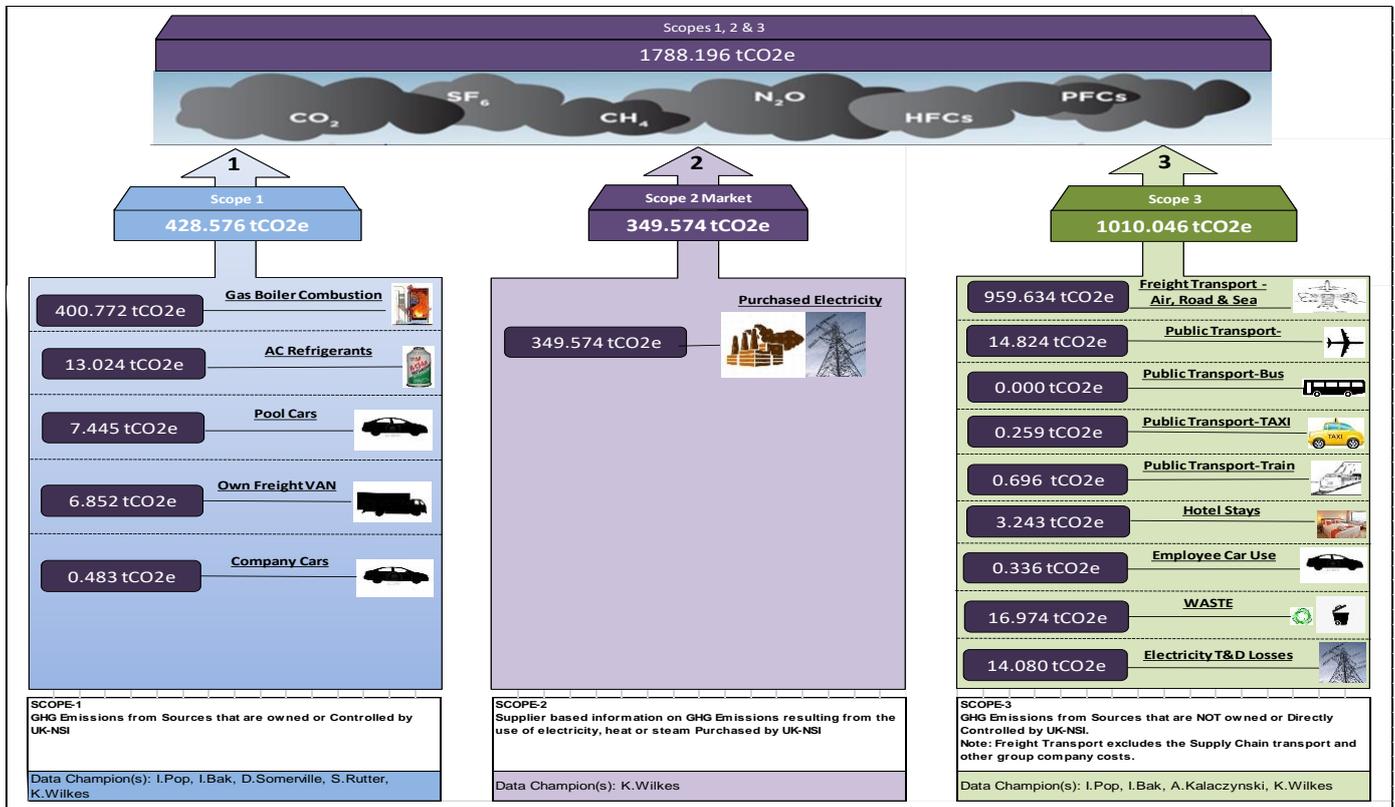
**Table 1** shows an overview of UK-NSI's 2016 carbon footprint, with all the elements that make up scope 1, 2 & 3 and tonnes of carbon (tCO<sub>2</sub>e) for each element.

# UK-NSI Carbon Footprint Report

Visualisation Chart – Scope 2 Location Based:



Visualisation Chart - Scope 2 Market Based:



# UK-NSI Carbon Footprint Report

## Intensity Metrics - Scope 2 Location Based:

<b>LOCATION: UK-NSI INTENSITY METRICS-CARBON FOOTPRINT &amp; CLIMATE CHANGE</b>																												
<b>Metric-1</b>	tCO <sub>2</sub> e Revenue	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">Metric Tonnes CO<sub>2</sub>e</td><td style="text-align: center;">3604.200</td><td style="text-align: center;">t</td></tr> <tr><td style="text-align: center;">Unit Total Revenue</td><td style="text-align: center;">92670779</td><td style="text-align: center;">£</td></tr> </table>	Metric Tonnes CO <sub>2</sub> e	3604.200	t	Unit Total Revenue	92670779	£	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">3604.200</td><td style="text-align: center;">t</td></tr> <tr><td style="text-align: center;">92670779</td><td style="text-align: center;">£</td></tr> </table>	3604.200	t	92670779	£	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">38.893</td><td style="text-align: center;">μt/£</td></tr> <tr><td colspan="2" style="text-align: center; font-size: small;">3.88925E-05 t/£</td></tr> </table>	38.893	μt/£	3.88925E-05 t/£									
Metric Tonnes CO <sub>2</sub> e	3604.200	t																										
Unit Total Revenue	92670779	£																										
3604.200	t																											
92670779	£																											
38.893	μt/£																											
3.88925E-05 t/£																												
<b>Metric-2</b>	tCO <sub>2</sub> e Employees	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">Metric Tonnes CO<sub>2</sub>e</td><td style="text-align: center;">3604.200</td><td style="text-align: center;">t</td></tr> <tr><td style="text-align: center;">Full Time Employee FTE</td><td style="text-align: center;">356</td><td style="text-align: center;">FTE</td></tr> </table>	Metric Tonnes CO <sub>2</sub> e	3604.200	t	Full Time Employee FTE	356	FTE	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">3604.200</td><td style="text-align: center;">t</td></tr> <tr><td style="text-align: center;">356</td><td style="text-align: center;">FTE</td></tr> </table>	3604.200	t	356	FTE	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">10.124</td><td style="text-align: center;">t/FTE</td></tr> </table>	10.124	t/FTE										
Metric Tonnes CO <sub>2</sub> e	3604.200	t																										
Full Time Employee FTE	356	FTE																										
3604.200	t																											
356	FTE																											
10.124	t/FTE																											
<b>Metric-3</b>	tCO <sub>2</sub> e Production	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">Metric Tonnes CO<sub>2</sub>e</td><td style="text-align: center;">3604.200</td><td style="text-align: center;">t</td></tr> <tr><td style="text-align: center;">Units of Production</td><td style="text-align: center;">1455366</td><td style="text-align: center;">Units</td></tr> </table>	Metric Tonnes CO <sub>2</sub> e	3604.200	t	Units of Production	1455366	Units	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">3604.200</td><td style="text-align: center;">t</td></tr> <tr><td style="text-align: center;">1455366</td><td style="text-align: center;">Units</td></tr> </table>	3604.200	t	1455366	Units	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">2476.490</td><td style="text-align: center;">μt/Unit</td></tr> <tr><td colspan="2" style="text-align: center; font-size: small;">0.00247649 t/Unit</td></tr> </table>	2476.490	μt/Unit	0.00247649 t/Unit									
Metric Tonnes CO <sub>2</sub> e	3604.200	t																										
Units of Production	1455366	Units																										
3604.200	t																											
1455366	Units																											
2476.490	μt/Unit																											
0.00247649 t/Unit																												
<b>Metric-4</b>	MWh Site	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">CRC Annual Threshold</td><td style="text-align: center;">&lt;6000</td><td style="text-align: center;">MWatts</td></tr> <tr><td style="text-align: center;">Monthly Consumption</td><td style="text-align: center;">&lt;500</td><td style="text-align: center;">MWatts</td></tr> </table>	CRC Annual Threshold	<6000	MWatts	Monthly Consumption	<500	MWatts	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">&lt;6000</td><td style="text-align: center;">MWatts</td></tr> <tr><td colspan="2" style="text-align: center; font-size: x-small;">Target</td></tr> <tr><td style="text-align: center;">4481.714</td><td style="text-align: center;">MWh</td></tr> <tr><td colspan="2" style="text-align: center; font-size: x-small;">Actual Result</td></tr> <tr><td style="text-align: center;">373.476</td><td style="text-align: center;">MWh</td></tr> </table>	<6000	MWatts	Target		4481.714	MWh	Actual Result		373.476	MWh	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">4481.714</td><td style="text-align: center;">MWh</td></tr> <tr><td colspan="2" style="text-align: center; font-size: x-small;">Actual Result</td></tr> <tr><td style="text-align: center;">373.476</td><td style="text-align: center;">MWh</td></tr> </table>	4481.714	MWh	Actual Result		373.476	MWh
CRC Annual Threshold	<6000	MWatts																										
Monthly Consumption	<500	MWatts																										
<6000	MWatts																											
Target																												
4481.714	MWh																											
Actual Result																												
373.476	MWh																											
4481.714	MWh																											
Actual Result																												
373.476	MWh																											
Period	2017 Calendar Year	Date	14/08/2018	Owner	Ken Wilkes																							

- ✓ Metric-1: Reduced by 24% compared with 2016 and reduced by 44% compared with the base year 2011.
- ✓ Metric-2: Reduced by 13% compared with 2016 and reduced by 30% compared with the base year 2011.
- ✓ Metric-3: Reduced by 8% compared with 2016 and reduced by 29% compared with the base year 2011.
- ✓ Metric-4: Reduced by 3% compared with 2016 and reduced by 2% compared with the base year 2011.

Metric 1 - Sales have gone up by 17% (positive factor)

Metric 2 - Head count has increased by 3% (positive factor)

Metric 3 - Units of production have gone down by 2% (negative factor)

Metric 4 - Electrical energy used has reduced by 9% (positive factor)

The most significant influencing factor on the above metrics is that UK-NSI's Location based carbon footprint has reduced by 10% when compared to 2016, but increased by 7% compared to the 2011 base year. All metrics show improvements. See analysis and comparison section for more information on the significant positive and negative variations within the location based carbon footprint scopes.

Changes to conversion factors will also have an influence on results.

# UK-NSI Carbon Footprint Report

## Intensity Metrics – Scope 2 Market Based:

<b>MARKET: UK-NSI INTENSITY METRICS-CARBON FOOTPRINT &amp; CLIMATE CHANGE</b>																																		
<b>Metric-1</b>	tCO2e 	Revenue	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Metric Tonnes CO2e</td> <td style="text-align: center; padding: 2px;">1788.196</td> <td style="text-align: center; padding: 2px;">t</td> </tr> <tr> <td style="padding: 2px;">Unit Total Revenue</td> <td style="text-align: center; padding: 2px;">92670779</td> <td style="text-align: center; padding: 2px;">£</td> </tr> </table>	Metric Tonnes CO2e	1788.196	t	Unit Total Revenue	92670779	£	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">19.296</td> <td style="text-align: center; padding: 2px;">μt/£</td> </tr> <tr> <td style="text-align: center; padding: 2px;"><small>1.92962E-05 t/£</small></td> <td style="text-align: right; padding: 2px;">↓</td> </tr> </table>	19.296	μt/£	<small>1.92962E-05 t/£</small>	↓																			
Metric Tonnes CO2e	1788.196	t																																
Unit Total Revenue	92670779	£																																
19.296	μt/£																																	
<small>1.92962E-05 t/£</small>	↓																																	
<b>Metric-2</b>	tCO2e 	Employees	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Metric Tonnes CO2e</td> <td style="text-align: center; padding: 2px;">1788.196</td> <td style="text-align: center; padding: 2px;">t</td> </tr> <tr> <td style="padding: 2px;">Full Time Employee FTE</td> <td style="text-align: center; padding: 2px;">356</td> <td style="text-align: center; padding: 2px;">FTE</td> </tr> </table>	Metric Tonnes CO2e	1788.196	t	Full Time Employee FTE	356	FTE	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">5.023</td> <td style="text-align: center; padding: 2px;">t/FTE</td> </tr> </table>	5.023	t/FTE	↓																				
Metric Tonnes CO2e	1788.196	t																																
Full Time Employee FTE	356	FTE																																
5.023	t/FTE																																	
<b>Metric-3</b>	tCO2e 	Production	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Metric Tonnes CO2e</td> <td style="text-align: center; padding: 2px;">1788.196</td> <td style="text-align: center; padding: 2px;">t</td> </tr> <tr> <td style="padding: 2px;">Units of Production</td> <td style="text-align: center; padding: 2px;">1455366</td> <td style="text-align: center; padding: 2px;">Units</td> </tr> </table>	Metric Tonnes CO2e	1788.196	t	Units of Production	1455366	Units	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">1228.692</td> <td style="text-align: center; padding: 2px;">μt/Unit</td> </tr> <tr> <td style="text-align: center; padding: 2px;"><small>0.001228692 t/Unit</small></td> <td style="text-align: right; padding: 2px;">↓</td> </tr> </table>	1228.692	μt/Unit	<small>0.001228692 t/Unit</small>	↓	↓																		
Metric Tonnes CO2e	1788.196	t																																
Units of Production	1455366	Units																																
1228.692	μt/Unit																																	
<small>0.001228692 t/Unit</small>	↓																																	
<b>Metric-4</b>	MWatt 	Site	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">CRC Annual Threshold</td> <td style="text-align: center; padding: 2px;">&lt;6000</td> <td style="text-align: center; padding: 2px;">MWatts</td> <td style="padding: 2px;">=</td> <td style="text-align: center; padding: 2px;">4481.714</td> <td style="text-align: center; padding: 2px;">MWatts</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center; padding: 2px;"><small>Target</small></td> <td></td> <td></td> </tr> <tr> <td style="padding: 2px;">Monthly Consumption</td> <td style="text-align: center; padding: 2px;">&lt;500</td> <td style="text-align: center; padding: 2px;">MWatts</td> <td style="padding: 2px;">=</td> <td style="text-align: center; padding: 2px;">373.476</td> <td style="text-align: center; padding: 2px;">MWatts</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center; padding: 2px;"><small>Actual Result</small></td> </tr> </table>	CRC Annual Threshold	<6000	MWatts	=	4481.714	MWatts				<small>Target</small>			Monthly Consumption	<500	MWatts	=	373.476	MWatts						<small>Actual Result</small>	=	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;">4481.714</td> <td style="text-align: center; padding: 2px;">MWatts</td> </tr> <tr> <td style="text-align: center; padding: 2px;">373.476</td> <td style="text-align: center; padding: 2px;">MWatts</td> </tr> </table>	4481.714	MWatts	373.476	MWatts	↓
CRC Annual Threshold	<6000	MWatts	=	4481.714	MWatts																													
			<small>Target</small>																															
Monthly Consumption	<500	MWatts	=	373.476	MWatts																													
					<small>Actual Result</small>																													
4481.714	MWatts																																	
373.476	MWatts																																	
Period	2017 Calendar Year	Date	14/08/2018	Owner	Ken Wilkes																													

The market based metrics follow a similar downward trend.

**Bio-mass reporting:** UK-NSI recognises the need to separately report bio-mass emissions. Currently UK-NSI have identified bio-mass emissions in the following two areas:

- Scope-1: Forecourt Fuels such as Petrol/Diesel used in mobile emissions, which represents 15.116 tonnes CO<sub>2</sub>e, which is approximately 0.42%, a non-material impact.
- Scope-2: Electricity Generation-although there may be a biogenic element it is not reported due to available up to date information.

# UK-NSI Carbon Footprint Report

## ANALYSIS & COMPARISONS

Table 2

Scope 1,2,3	Activity	2011 tCO <sub>2</sub> e	2012 tCO <sub>2</sub> e	2013 tCO <sub>2</sub> e	2014 tCO <sub>2</sub> e	2015 tCO <sub>2</sub> e	2016 tCO <sub>2</sub> e	2017 tCO <sub>2</sub> e	
Scope 1 A	Fuel consumed for vehicles controlled/owned by the company-Pool cars	15.46	11.086	8.471	5.837	6.687	7.199	7.445	
B	Fuel consumed for vehicles controlled/owned by the company-Company cars	1.59	1.844	4.172	1.225	1.913	1.138	0.483	
C	Fuel consumed for vehicles controlled/owned by the company Freight Truck/Vans	1.57	0.954	1.38	2.993	3.255	3.983	6.852	
D	Gas/Fuel Combustion-Boilers & Kitchen Use	419.48	525.528	618.845	504.988	450.836	479.634	400.772	
E	Refrigerants (Fugitive Emissions)	47.14	17.2617	18.716	28.963	56.561	15.525	13.024	
Scope 2	Purchased Electricity - Location Based	2221.098	2093.287	2039.854	2312.095	2250.239	2216.431	2165.578	
Scope 3 A	Employee Car on company business	0	0	0	0	0	0	0.336	
B	Employee Business Train Travel	0.224	0.397	0.95	0.643	0.774	0.45	0.696	
C	Employee Business Taxi travel	0.52	0.206	0.961	0.473	0.118	0.275	0.259	
D	Employee Business Bus travel	0.003	0.005	0.027	0.003	0.0004	0	0	
E	Employee Air travel	14.154	14.397	23.197	24.999	36.932	33.537	14.824	
F	Employee Hotel Stays	1.379	1.041	1.246	0.937	1.052	1.25	3.243	
G	Material delivery/collection by ship (Logistics)	0	1.576	19.804	38.08	3.305	4.78	5.33	
H	Material delivery/collection by Air (Logistics)	612.508	192.486	497.757	1225.632	722.651	1211.108	847.614	
I	Material delivery/collection by Road (Logistics)	0	11.434	26.089	43.856	37.696	25.147	106.69	
J	Waste - Batteries	0	0	0	0	0	0	0.026	
K	Waste-Scrap Metal	0.336	0.37527	0.63714	0.12957	0.17241	0.18375	1.575	
L	Waste Aluminium Cans	0	0.002	0.003	0.006	0.00185	0	0	
M	Waste-Commercial/Industrial	28.44	31.2988	32.4371	3.6231	4.7359	8.9216	8.947	
N	Waste-Paper/Cardboard	1.315	1.53132	1.7472	1.7745	1.7472	2.2096	2.828	
O	Waste-Plastics	0.915	0.87738	0.9673	1.155	1.23711	1.217	1.873	
P	Waste-WEEE Small	0.368	0.53277	0.478374	0.477112	0.237265	0.1436	0.212	
Q	Waste-Wood	0.193	0.536928	2.84024	1.69848	0.19488	1.993	1.513	
R	Electricity - Transmission & Distribution Losses	New addition 2017							14.080
<b>Total CO<sub>2</sub>e for ALL Scopes Location Based</b>		<b>3366.701</b>	<b>2906.657</b>	<b>3300.372</b>	<b>4199.588</b>	<b>3580.398</b>	<b>4015.126</b>	<b>3604.200</b>	

Table 3

2016/17 compared		2011/17 compared	
tCO <sub>2</sub> e Diff	+/- %	tCO <sub>2</sub> e	+/- %
0.246	3.42	-8.015	-51.84
-0.655	-57.56	-1.107	-69.62
2.869	72.03	5.282	336.43
-78.862	-16.44	-18.708	-4.46
-2.501	-16.11	-34.116	-72.37
-50.853	-2.29	-55.52	-2.50
0.336	100.00		
0.246	54.67	0.472	210.71
-0.016	-5.82	-0.261	-50.19
0	0.00	-0.003	-100.00
-18.713	-55.80	0.67	4.73
1.993	159.44	1.864	135.17
0.55	11.51	5.33	100.00
-363.494	-30.01	235.106	38.38
81.543	324.27	106.69	100.00
0.026	100.00		
1.39125	757.14	1.239	368.75
0	0.00	0	0.00
0.0254	0.28	-19.493	-68.54
0.6184	27.99	1.513	115.06
0.656	53.90	0.958	104.70
0.0684	47.63	-0.156	-42.39
-0.48	-24.08	1.32	683.94
14.08	100.00		
-410.926	-10.234	237.499	7.05

Key:

Reduction in CO<sub>2</sub>e <10% compared to previous year  
 Increase in CO<sub>2</sub>e <10% compared to previous year

Reduction in CO<sub>2</sub>e >10% compared to previous year  
 Increase in CO<sub>2</sub>e >10% compared to previous year

**Table 2** shows the results year on year from the base year 2011 to date. It further breaks down each element that is reported in each scope by tCO<sub>2</sub>e.

The colour coding is a simple means of gaining a general overview without the need to include a multitude of graphs that show trends and patterns.

It must be noted that the colour coding is applied as an indication on the performance against the previous year result in terms of an increase or decrease in tCO<sub>2</sub>e by up to 10% or greater than 10%.

It is a requirement that variations of 10% or more are explained with reasons why.

**Table 3** compares variations between 2017 and 2016 tCO<sub>2</sub>e and 2017 with the base year 2011 tCO<sub>2</sub>e. It shows the actual tCO<sub>2</sub>e difference and the actual % variation.

# UK-NSI Carbon Footprint Report

---

## Analysis of 2017 variation greater than 10% tCO<sub>2</sub>e and general comments

Within each scope of the carbon footprint there are different elements that are reported and include a combination of positive and negative results. Only results that have in 2017 increased or decreased by 10% or more warrant comment in the analysis section, however there are other elements that should also be included with explanation.

### UK-NSI 2017 overall carbon footprint result:

The 2017 carbon footprint shows significant positive and negative swings greater than 10% on many of its elements as a result of business impacts, business decisions and change.

A total reduction of 10.2% (-410.9 tCO<sub>2</sub>e) has been achieved against the 2016 carbon footprint, [with an increase of 7% \(+237.5 tCO<sub>2</sub>e\) against the 2011 base year result](#). The main positive influencing factors for the 10.2% reduction in tCO<sub>2</sub>e are;

- Air freight – A reduction of 30% (-363.5 tCO<sub>2</sub>e)
- Gas - A reduction 16.4% (-78.9 tCO<sub>2</sub>e)
- Employee air travel – A reduction of 55.6% (-18.5 tCO<sub>2</sub>e)

### Scope 1 significant variations:

The total tCO<sub>2</sub>e for the whole of scope 1 has reduced by 15.6% (-78.9 tCO<sub>2</sub>e)

- Company pool cars – Pool car use showed a significant decrease year on year from 2011, then in 2015 it started to go up and again in 2017 by 3.4% (+0.246 tCO<sub>2</sub>e) compared to 2016 data.

Pool car use is determined by necessary business road travel requirements.

[When compared to 2011 data it shows a decrease of -51.8% \(-8 tCO<sub>2</sub>e\) difference.](#)

Although the years from 2015 show a year on year increase, it is expected that there will be reductions in next year's results following the introduction of an electric vehicle for local travel. Pool car use generated 7.4 tCO<sub>2</sub>e which equates to 0.21% of the total carbon footprint.

- Company cars - Reduced by 57.6% (-2,117 miles = -0.655 tCO<sub>2</sub>e) compared to 2016.

The main influencing factors that have led to the reduction in tCO<sub>2</sub>e for company cars is, in 2017 UK-NSI actively discouraged non-essential business travel, tightened the budget on business travel and installed teleconferencing equipment in meeting rooms to encourage video conferencing.

[Compared to 2011 data it also shows a reduction of 69.6% \(-1.1 tCO<sub>2</sub>e\)](#)

- Company van use – An increase of 72% (+2.869 tCO<sub>2</sub>e) compared with 2016 data.

Company van use has been significantly increasing year on year from 2013. Offsite tool storage, transport between Manorside and the main site have been influencing factors. But the main influencing factor has been when a first tier supplier that UK-NSI supplies moved from Rubery in Birmingham to Tamworth, increasing a return journey from approximately 25 miles to 140 miles, 5 days a week.

[Compared to 2011 data shows an increase of 336.4% \(+ 5.282 tCO<sub>2</sub>e\)](#)

## UK-NSI Carbon Footprint Report

---

This a direct result of the business need for own freight transport and should show an improvement in the 2018 carbon footprint with the surrender of the lease on Manorside.

- Gas boiler & kitchen use - Reduced by 16.4% (-78.862 tCO<sub>2</sub>e) compared to 2016 data.  
**Gas is the third biggest GHG contributor at 400.772 tCO<sub>2</sub>e which equates to 11.1% of the total carbon footprint for UK-NSI.**

The main influencing factors in 2017 has been the upgrade of improved energy efficient boiler replacement and the weather.

Compared to 2011 data it shows a reduction of 4.5% (-18.708 tCO<sub>2</sub>e)

UK-NSI have been progressively improving its building management systems so as to have greater control over the internal environment in terms of comfort and harmony of systems, i.e. heating & air con not conflicting with each other. However it is accepted that the greatest influence on gas use is the weather.

- Refrigerants/air con equipment – Reduced by 16.1% (-2.501 tCO<sub>2</sub>e) compared to 2016 data.

Compared to 2011 data it shows a decrease of 72.4% (-34.116 tCO<sub>2</sub>e)

Main influencing factor has been the progressive replacement of older less reliable air con equipment with newer equipment that is more reliable and efficient.

### Scope 2 general comment:

Electricity use has been showing a year on year decrease from 2014, with a reduction in 2017 of 2.29% (-50.853 tCO<sub>2</sub>e) and a reduction of 2.5% (-55.52 tCO<sub>2</sub>e) compared to 2011 data.

**Electricity has the highest contribution to the carbon footprint at 60% (2165.6 tCO<sub>2</sub>e) of the total carbon footprint.**

This is a result of UK-NSI's investment in replacing older equipment with more energy efficient equipment, i.e. hydraulic mould injection presses with all electric mould injection presses, reduced energy reflow ovens, etc, and installation of sub metering with closer energy monitoring. Further reductions are expected in the 2018 carbon footprint with the surrender of the lease on Manorside.

Security regularly monitor out of hours lighting and air leak audits and report it for actioning.

Monthly health, safety & environmental audits in each area require the identification and action of equipment unnecessarily left on.

### Scope 3 variations:

The total tCO<sub>2</sub>e for the whole of scope 3 has reduced by 21.7% (-280.5847 tCO<sub>2</sub>e)

- Employee car on company business – Identified as significant because it was being reported in scope 1 data, but as from 2017 it has been extracted from scope 1 data and reported under the correct scope 3 for the first time. Not deemed as significant at 0.01% (0.336 tCO<sub>2</sub>e) of the total carbon footprint.
- Employee train travel – Increased by 54.7% (+0.246 tCO<sub>2</sub>e) compared to 2016 data.

This is the result of using public transport more in 2017, rather than company vehicles and is not deemed significant at 0.02% (0.065 tCO<sub>2</sub>e) of the total carbon footprint.

## UK-NSI Carbon Footprint Report

---

Compared to 2011 data shows an increase of 210.7% (+0.472 tCO<sub>2</sub>e)

Train travel is driven by necessary business travel requirements.

- Employee air travel – Reduced by 55.8% (-18.713 tCO<sub>2</sub>e) compared to 2016 data. **This is the sixth biggest tCO<sub>2</sub>e contributor at 0.41% (14.824 tCO<sub>2</sub>e) of the total carbon footprint.**

The 55.8% reduction is a direct result of UK-NSI's policy to actively discouraged non-essential business travel in 2017 and investing in teleconference equipment for meeting rooms.

Compared to 2011 data it shows a 4.7% (+0.67 tCO<sub>2</sub>e) increase.

- Employee hotel stays – An increase of 159.4% (+1.993 tCO<sub>2</sub>e) compared to 2016 data. This is not a true comparison due to the calculation method changing in 2017, i.e. changed from kWh per night to CO<sub>2</sub>e per night, but needed to be explained in this report.

Included in hotel stays are essential business activities and increased duration of stay as part of HUD development and training in Japan.

Compared to 2011 data it shows an increase of 135.2% (+1.864 tCO<sub>2</sub>e)

The main contributory factor to this this result is that the manner in which the tCO<sub>2</sub>e is calculated has changed for a more reliable method. With hotel stays equating to 0.09% of the total carbon footprint a recalculation was not deemed necessary, but will be considered as part of the 2018 carbon foot print.

- Air, Sea & Road freight transport – Overall freight transport has reduced by 22.7% (-281.401 tCO<sub>2</sub>e) compared to 2016 data. However there have been significant positive & negative swings in freight transport results.

General comment – The electronics industry has been and is still being impacted by a global shortage of electronic components/available supplies. This is impacting freight transport systems by multiplying the quantity shipments necessary to deliver the same quantity that was delivered in one shipment before the shortage, i.e. if a supplier tells you that you can no longer have 20,000 parts in one shipment, but you can have 2,000 parts in 10 shipments over a set period of time, this would mean an additional 9 transport shipments for the same quantity.

Air freight reduced by 30% (- 363.494 tCO<sub>2</sub>e) compared to 2016 data.

Air-freight had significantly increased in 2016 mainly due to maintaining customer needs for new models. The business impact of this factor reduced in 2017. **Air freight is the second biggest contributor of tCO<sub>2</sub>e at 23.5% (847.614 tCO<sub>2</sub>e) of the total carbon footprint.**

Compared to 2011 data it shows an increase of 3.4% (+268.75 tCO<sub>2</sub>e)

Air freight is a necessary standard route of supply. There is no particular general trend for air freight as it tends to go through significant ups and downs, which correlates with challenging time constraints and difficulties with component shortages, product

## UK-NSI Carbon Footprint Report

---

development cycles, and business impacts locally and internationally or unexpected global events.

Sea freight increased by 11.5% (+ 0.550 tCO<sub>2e</sub>) compared to 2016 data.

Sea freight accounts for 0.15% (5.330 tCO<sub>2e</sub>) of the total carbon footprint and is not deemed to be significant due to small amounts of variation can show big percentage gains.

Compared to 2011 data sea freight increased by 100% because no sea freight was reported in 2011 and therefore no benchmark against the base year.

Road freight – Increased by 324.3% (+81.543 tCO<sub>2e</sub>) compared to 2016 data. **Road freight is the fourth biggest contributor of tCO<sub>2e</sub> at 2.96% (106.690 tCO<sub>2e</sub>) of the total carbon footprint.**

There have been additional factors that have significantly impacted road freight transport besides those mentioned in the general comments. Daily supplies from a supplier based in Essex. A local supplier based in Kidderminster suffered a catastrophic fire and although UK-NSI was able to recover and refurbish the tooling ready for use again, it meant an alternative supplier had to be found, which was based in Leigh on Sea. This meant a significant increase on millage from approximately a 40 mile return trip to 320 miles, with daily deliveries, plus additional transport to cover the high reject ratio.

Compared to 2011 data road transport increased by 100% because no road freight was reported in 2011 and therefore no benchmark against the base year.

- Waste – Increased by 15.7% (+2.305 tCO<sub>2e</sub>) compared with 2016 data. **Waste is the fifth biggest contributor to tCO<sub>2e</sub> at 15.7% (16.974 tCO<sub>2e</sub>) of the total carbon footprint.**

Main significant influencing factors;

Scrap metal – Increased by 757.1% (+1.391 tCO<sub>2e</sub>) compared to 2016 data.

Obsolete tooling, obsolete equipment and two end of life production lines were scrapped.

Cardboard – Increase of 28% increase (+0.618 tCO<sub>2e</sub>) compared to 2016 data.

Packaging waste has increased due to the increased supplies in cardboard.

Plastics – Increased by 53% (+0.656 tCO<sub>2e</sub>) compared to 2016 data.

Obsolete plastic packing was scrapped in 2017 resulting in several additional collections.

WEEE – Increased by 47.6% (+0.068 tCO<sub>2e</sub>) compared to 2016 data.

Scrapping of obsolete equipment and parts in 2017.

Wood – Increased by 24% (+0.480 tCO<sub>2e</sub>) compared to 2016 data.

New equipment delivered in wooden packaging and an increase in scrap wooden pallets.

Compared with 2011 waste has reduced by 14.2% (-14.593 tCO<sub>2e</sub>)

- Electricity distribution and supply losses – 14.080 tCO<sub>2e</sub> addition to the 2017 carbon footprint. This has not been reported previously.

# UK-NSI Carbon Footprint Report

## CONCLUSIONS

Overall an improvement on last year's carbon footprint by 10.2% (410.9 tCO<sub>2</sub>e) and a good result considering the business challenges.

UK-NSI's main contribution to global warming is from Electricity use, the usage of Sub-contracted Transport and Fuel/gas combustion-boiler use. These three elements combined account for 97.8% of the total of UK-NSI's carbon equivalent emissions.

There are many significant percentage tCO<sub>2</sub>e increases and decreases within the carbon footprint, but in general terms there are reductions in CO<sub>2</sub>e-Emissions for Scope 1, Scope-2 and Scope-3. [However, the total emissions have increased from the base year by 7.05%.](#)

UK-NSI direct emissions are much more in control, however scope-3 emissions largely depend on business needs, the customers, new model activity, unforeseen events and supply chain conditions, etc.

The accuracy and reliability of source data plays an important part in comparisons with previous years and the accuracy of the carbon footprint. This has been improved this year, i.e. by calculating actual weights in place of chargeable weights it reduced freight weight by 9.023 tonnes (7.64%) to a total of freight of 118.174 tonnes, and further improvements are being investigated.

Electricity conversion factors have a significant influence on the carbon footprint. It has been noted that DEFRA issues up to date conversion factors more frequently and if used this time, it would have significantly reduced the carbon foot print further. However it would have meant doing a full recalculation of UK-NSI's carbon footprint all the way back to the base year 2011.

With this carbon footprint analysis UK-NSI have shown they have taken steps to understand, measure, monitor and take action to reduce its GHG emissions. Apart from the financial ones, the other benefits to be gained include;

- ✓ Demonstrates a commitment to environmental responsibility and supports the company's environmental activities, as well as its parent company's expectations.
- ✓ Assures customers, employees, and external stakeholders of a commitment to tackling climate change.
- ✓ Prepares for future regulations to limit greenhouse gas emissions

# UK-NSI Carbon Footprint Report

## RECOMENDATIONS

Consideration needs to be given to;

1. Recalculating UK-NSI's carbon footprint based on DEFRA's conversion factors to ensure the latest and most reliable conversion factors are used when calculating the carbon footprint.
2. Assess the current source data system in an effort to identify if and where improvements to the accuracy and reliability of data can be made.
3. Developing KPI's that would monitor and control key aspects of the business operations that would have the most significant impact on the company's carbon footprint.
4. Regular communication to all employees on the performance and progress being made with controlling and reducing the company carbon footprint.
5. Company management should review freight use, with an aim to identifying any possible reduction in freight use and consequential emissions, by minimising, mainly AIR, but also ROAD Freight.
6. Persons responsible for equipment purchase and their usage are encouraged to continue to consider how the use of electricity can be minimised.

The key message is:

Can the equipment/lighting be switched-off when not in use or when not required?  
When procuring new equipment – are there alternatives that consume less energy?

7. Waste reduction initiatives.
8. Continue lighting audits and air leak surveys.
9. Continue monitoring energy and gas use.

## REFERENCES

- Department for Environment, Food and Rural Affairs (<http://www.defra.gov.uk>)
- The Greenhouse Gas Protocol Initiative (<http://www.ghgprotocol.org>).
- QP-060-030-Procedure-Carbon Footprint.