

# National Library of Scotland Public Sector Sustainability Report 2019 - 20

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## 1.0 Introduction

In 2009 the Scottish Government set what remains, one of the most ambitious pieces of climate change legislation anywhere in the world, namely: The Climate Change (Scotland) Act 2009

The Act commits Scotland to reduce its emissions by at least 80% from 1990 levels by 2050; with an interim emissions reduction target of 42% by 2020.

Section 44 of the Act places duties on Scottish public bodies which require that, in exercising their functions, they act:

- in the way best calculated to contribute to the delivery of the Act's emission reduction targets;
- in the way best calculated to help deliver any statutory programme for adapting to the impacts of climate change; and
- In a way that it considers most sustainable.

Guidance to assist public bodies in complying with these duties is laid out in Public Bodies Climate Change Duties: Putting them into Practice

[www.scotland.gov.uk/Publications/2011/02/04093254/0](http://www.scotland.gov.uk/Publications/2011/02/04093254/0).

In accordance with the "Climate Change (Scotland) Act 2009, The Library is defined as a Major Player and is expected to do more than other public bodies, with additional actions laid out in the guidance. Below is the definition of what is expected of a Major Player:

For the purposes of the public body's climate change duties, Major Players are considered to be:

- Public bodies with large estates and large numbers of staff
- Public bodies with a high impact and influence, e.g. Scottish Government, local authorities, SEPA, SNH
- Public bodies with large expenditure
- Public bodies that provide an auditing or regulatory function

In some aspects of the guidance, it is suggested that Major Players could consider doing more in comparison with other public bodies. Where this is the case, it is clearly specified throughout the guidance in the sections containing 'suggested actions', which set out those suggested actions for Major Players in bold text. However, it is up to public bodies to decide what action is appropriate for them. Further detail on the classifications of Major Players and a full list of those bodies, according to these categories, suggested to be Major Players follows below. Please note that this list is not exhaustive, nor is it a cast-iron classification, and does not restrict those bodies not suggested as Major Players from taking forward actions suggested for Major Players if they so wish.

In line with the principles and methods of reporting, laid out in the guidance, the Library is committed to demonstrating best practice by providing transparent and open reporting on the delivery of its climate change duties. To this end the report:

- has been prepared in line with the Scottish Government Public Sector Sustainability Reporting – Guidance on the preparation of Annual Sustainability Reports Financial Year 2019-20.
- shall be published on the Library's website.

## 2.0 Executive summary

### 2.1 Progress during 2019/20

The National Library of Scotland (the Library) published its first Carbon Management Plan in April 2010

In it, the Library set out its low carbon vision;

- **The Library will rise to the ambition demonstrated by the Scottish Government and play its part in the transformation of the nation into a low-carbon economy**
- **The Library will work to become a low-carbon, energy efficient organisation. In doing so it will mitigate against the challenges that climate change and energy security posed to NLS in the medium to long term**

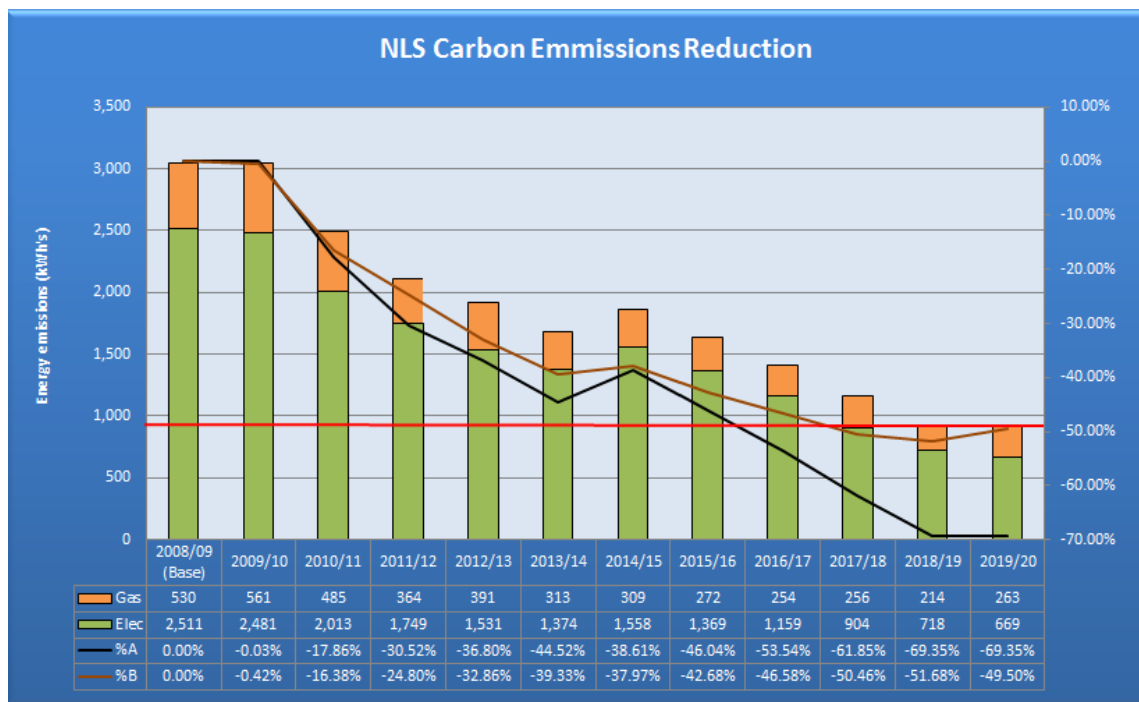
And the following revised target:

- Having now met the initial Scottish government target for 2020, the National Library of Scotland is committed to further reducing CO<sub>2</sub> its emissions from its operation by 70% by 2020 from 2008/09 levels.**

During the financial year 2019 - 20 the Library further managed to surpass the initial Scottish Government targets set of GHG emissions (42%) and energy consumption (40%) according to baseline year 2008/09 set by the Library.

It achieved a reduction in its operations of:

- GHG emissions by **69.09%**
- Energy consumption by **50.76%** and continues to stabilise its utilities costs



A = Revised coefficient used year on year end

Base year B = base year coefficient used

## Comments on results;

### Energy Consumption & GHG Emissions

The Library continues to make progress as it strives to meet the challenge of achieving a net zero carbon emissions estate with an overall **69.09%** GHG emissions reduction having now been achieved over the past 11 years. This is just below the target the Library set for itself (70%) but is significantly above the Scottish Government target (42%). There was however a slight increase in energy consumption over the last 12 months with the cumulative reduction since 2008/09 now standing at **50.76%**. This represents a 3% increase from the previous years reported consumption figures and was due to unexpected operational infrastructure difficulties such as the energy consumption adjustments in the BMS and the maximum ability that we are reaching in our plant to reduce consumption without further investment in aging plant replacement.

Key improvement factors in relation to the reduction in GHG emissions were as follows:

- The diligent work of the FM framework provider (ECG FM) and controls specialist Craigalan Controls (CCL) who continue to develop and implement enhanced BMS control strategy changes.
- The implementation and development of the “Open Protocol Platform” that is enabling real time consumption data to be monitored and analysed to achieve further operational energy efficiencies.
- Implementation of several further additional carbon initiative projects (e.g. George IV Bridge (GB) Main Reading Room LED lighting, George IV Bridge (GB) boilers replacement and Causewayside (CB) boilers replacement and Causewayside (CB) Air Handling Units variable speed drive motor replacements).
- Relatively mild weather through the autumn and winter periods compared to previous years.
- Changes in the carbon conversion factors – reflecting the move towards greener forms of energy across the UK market.

Next Steps - It should be noted that if the Library is to continue to make progress of meeting the target of Net Zero Carbon by 2045 then major financial investment will be required to replace the Library's inefficient legacy plant and to investigate the implementation of new energy efficient technologies. There will also be a need to refresh the current staff engagement programmes as carbon reductions and energy savings become harder to be achieved. All this will be considered as part of a Climate Action Plan currently being developed.

### Business Travel/Owned Transport

There was a reduction in business travel measured by distance travelled and Co2 emissions over the year. There was a decrease of **16.10%** in CO2 emissions from the previous year (2018/19) and within this Air Travel (Domestic) increased by **30.7%**, Air Travel (Short haul) by **69.3%** and Air Travel (Long haul) decreased by **54.7%** to **8.796** tonnes CO2.



### Waste

Waste has shown a decrease in total arisings of **4.53%**. However, the percentage of waste sent to land fill increased from **29.5%** to **41.6%**. The following have been identified as reasons;

- The waste provider changed the way of measuring data for recycling and general waste from estimates of bin weights to counting the numbers of bags uplifted from site. In order to accurately quantify waste the intention is to return to the practice of weighing the waste bins
- There has been an increase in the amount of mixed waste produced within the Library creating contamination so increasing the waste to landfill

It is clear that there remains some way to go if the Library is to achieve the target of 5% of all waste arisings to go to landfill by 2025 and so a greater focus will be placed on this area over the next 12 - 24 months.

## 2.2 Summary of Performance: Status

Area	Target	Target source	2008/09 baseline	2018/19	2019/20	% change against baseline	% change against previous year	Status
GHG emissions (Tonnes CO2 e)	Reduce GHG emissions from operations by 42% by 2020 from 2008/09 levels	SG	3,197	995	988	-69.09%	-0.7%	
Total energy consumed (kWh)	Reduced its energy consumption by at least 40% by 2020	CMP	7,926,595	3,677,579	3,902,450	-50.76%	+6.11%	
Total energy expenditure	Not to exceed the baseline year numbers 2008/09		£585,252	£369,192	£366,501	-37.37%	-0.72%	
Total waste arisings (Tonnes)	Departments to reduce their waste arisings by 25% by 2020, relative to 2004/2005 levels.	SOGE	128.9	28.46	27.17	-78.92%	-4.53%	
% waste recycled	Recycle 70% of all waste arisings by 2025	SG	49.3%	69.7%	56.7%	+7.4%	-13.0%	
% waste to landfill	Only 5% of all waste arisings to go to landfill by 2025	SG	50.7%	29.5%	41.6%	-9.1%	+12.1%	
Total waste expenditure after income	Not to exceed the baseline year numbers 2008/09		£14,452	£10,230	£14,322	-0.89%	+0.4%	
Water consumption (m3)	Reduce water consumption by 25% in the office and non-office estate by 2020, relative to 2004/2005	SOGE	9,124	6,569	6,099	-33.15%	-7.15%	
Water expenditure	Not to exceed the baseline year numbers 2008/09		£63,803	£65,403	£94,226	+47.68%	+44.06%	
Owned transport & business travel (Km)	Not to exceed the baseline year numbers 2008/09		1,038,859	454,958	411,066	-60.43%	-9.64%	



Achieved / on target



Progress not sufficient to meet target / negative progress in reporting period



Negative progress

### 3.0 Key Performance Areas

Greenhouse Gas Emissions			2008/09	2016/17	2017/18	2018/19	2019/20	
Non-financial indicators (Tonnes CO <sub>2</sub> e)	Gross emissions Scope 1	Gas	530	254	256	214	263	
		Organisation owned fleet	12	8	9	6	7	
		<b>Sub-total</b>	<b>542</b>	<b>262</b>	<b>264</b>	<b>220</b>	<b>270</b>	
	Gross emissions Scope 2	Electricity	2,511	1,159	904	718	669	
		<b>Sub-total</b>	<b>2,511</b>	<b>1,159</b>	<b>904</b>	<b>718</b>	<b>669</b>	
	Gross emissions Scope 3	Business travel	117	34	50	47	40	
		Waste disposal	18	2	2	3	4	
		Water supply & disposal	10	6	6	7	6	
		<b>Sub-total</b>	<b>144</b>	<b>41</b>	<b>57</b>	<b>57</b>	<b>49</b>	
	<b>Total Gross emissions</b>			<b>3,197</b>	<b>1,462</b>	<b>1,225</b>	<b>995</b>	<b>988</b>

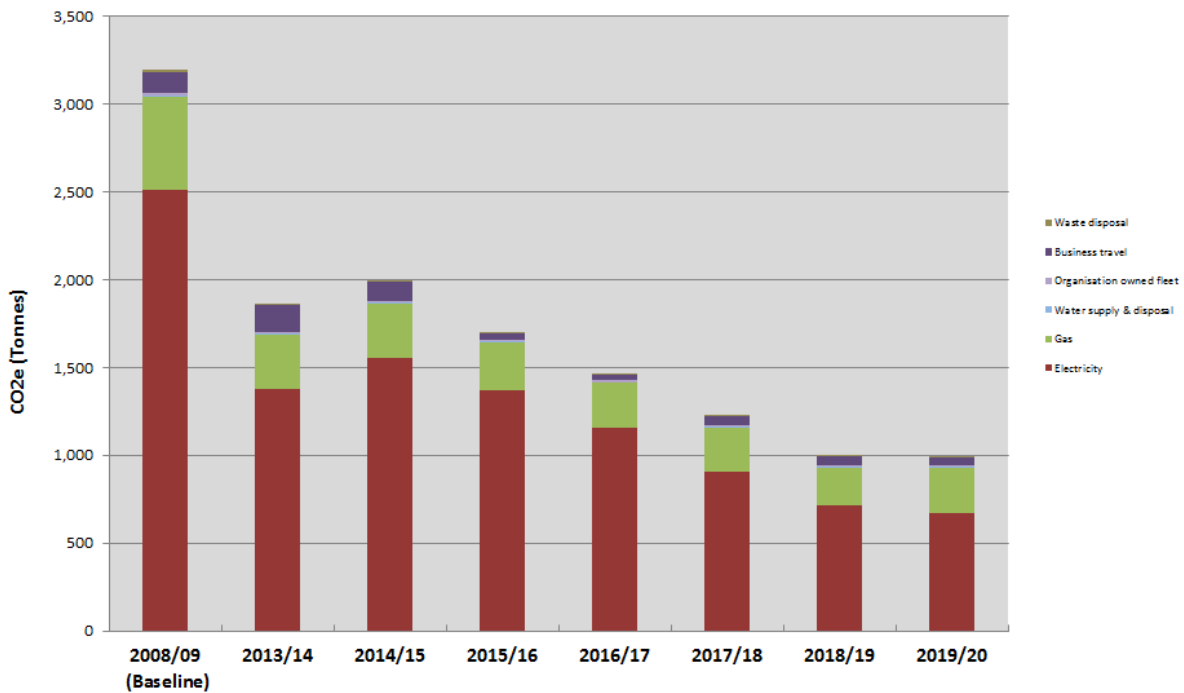


Figure 1 Total Greenhouse Gas emissions

**Targets:** To reduce CO<sub>2</sub> emissions from operations by 42% by the end of financial year 2017/18 against 2008/09 levels.

The Library has exceeded this commitment early and therefore reset a target reduction of 70% greenhouse gas emissions by 2020.

**Direct impacts:** 95.1% per cent of the Library’s emissions arise from energy consumption, of which 68% results from the consumption of electricity. The current Carbon Management Plan, (CMP), focuses on energy reduction measures as the most effective way of reducing GHG emissions. There was a 6.11% increase in energy consumption from last year. As other sources of emissions, such as transport, only represent 4% of our greenhouse gas emissions, the focus will remain on reducing energy consumption and focusing on reducing electricity consumption in the current CMP review.



<b>3.2 Energy consumption</b>		<b>2008/09</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>
<b>Non-financial indicators (kWh)</b>	Electricity 100% renewable	5,061,828	2,812,096	2,570,820	2,536,384	2,615,906
	Electricity renewable	0	0	0	0	0
	Gas	2,864,767	1,240,041	1,249,288	1,141,242	1,286,544
	LPG	0	0	0	0	0
	Other	0	0	0	0	0
	<b>Total energy</b>	<b>7,926,595</b>	<b>4,052,137</b>	<b>3,820,108</b>	<b>3,677,626</b>	<b>3,902,450</b>
	Total electricity per m sq.	136	74	69	70	72
	Total gas per m sq.	77	33	34	31	35
	<b>Total energy per m sq.</b>	<b>213</b>	<b>106</b>	<b>103</b>	<b>101</b>	<b>108</b>

<b>Financial indicators</b>	Total cost elec.	£508,988	£300,301	£278,902	£331,878	£325,311
	Total cost gas	£76,264	£29,536	£30,015	£37,314	£41,190
	<b>Total cost</b>	<b>£585,252</b>	<b>£329,837</b>	<b>£308,917</b>	<b>£369,192</b>	<b>£366,501</b>
	Total cost elec. / total elec. consumption per kWh	£0.101	£0.107	£0.108	£0.131	£0.115
	Total cost gas / total gas consumption kWh	£0.027	£0.024	£0.024	£0.033	£0.030
	CRC License expenditure	£0	£0	£0	£0	£0

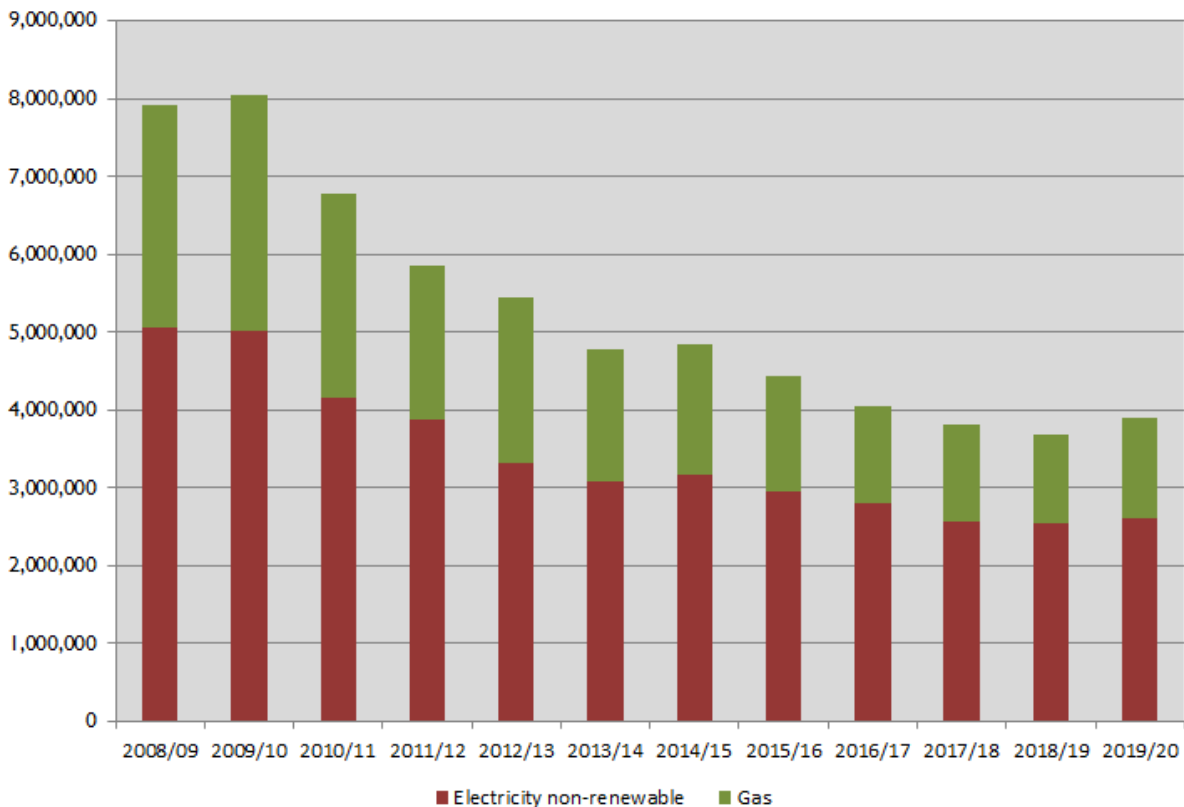
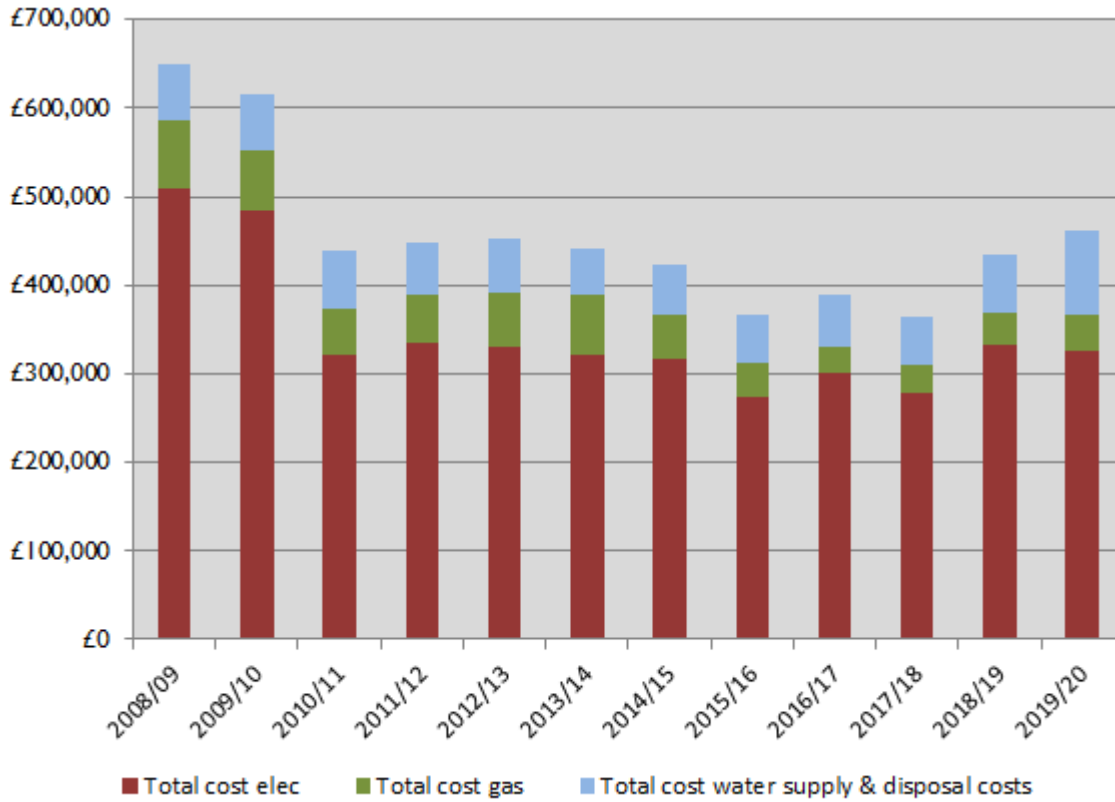


Figure 2 Total energy consumption (kWh)



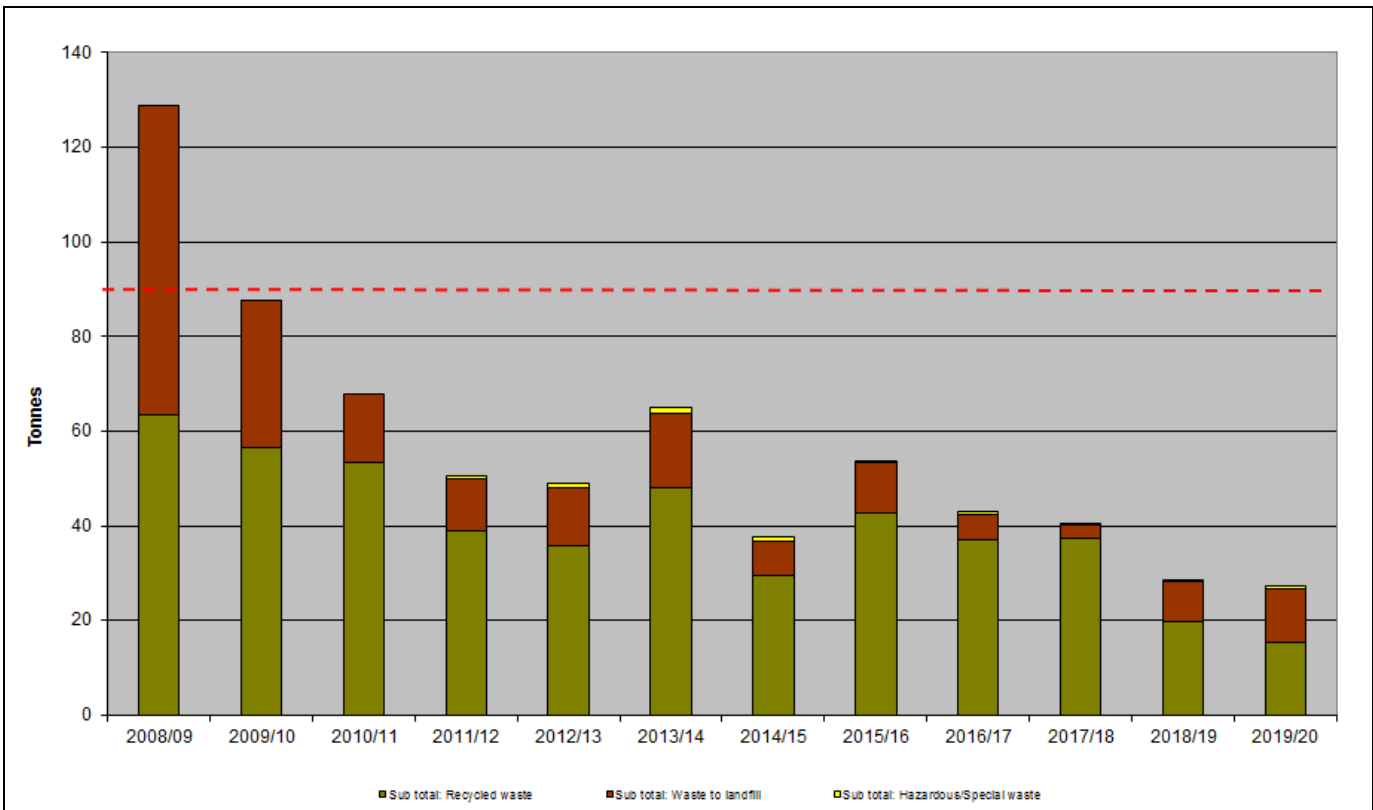
**Figure 3 Total utility costs**

**Targets:** The Library has reduced its energy consumption by **50.76%** since 2008/09.

This exceeds the Scottish Government target to reduce energy consumption by at least **40%** by 2020.

**Direct impacts:** The average cost of electricity for 19/20 decreased by approximately **2%** and the average cost of gas increased by approximately **10.38%**. The work being done in continuing to reduce energy consumption, year on year, has resulted in the Library avoiding any increased financial impact with the overall cost of energy decreasing by **£2,691**.

<b>3.3 Waste (Excluding construction)</b>		<b>2008/09</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>
<b>Hazardous / special waste (Tonnes)</b>	Hazardous waste	0.16	0.38	0.00	0.00	0.25
	Clinical waste		0.16	0.16	0.22	0.23
	<b>Subtotal: Hazardous/Special waste</b>		<b>0.53</b>	<b>0.17</b>	<b>0.22</b>	<b>0.49</b>
<b>Non-Hazardous: Re-used / Recycled / Composted (Tonnes)</b>	Aluminium & steel cans	0.04				
	Cardboard	3.09	1.26	1.24	1.82	0.67
	Plastic bottles	0.02	0.01	0.19	0.32	0.31
	Paper - General	10.09	0.33	1.48	2.66	3.53
	Mixed recycling	14.66	19.28	10.19	1.30	0.99
	Timber		0.00	0.00	0.01	0.00
	Paper - Confidential	26.61	3.26	2.14	1.75	1.31
	Metal	3.62	0.00	3.92	0.00	0.00
	Glass	1.61	0.23	0.29	0.64	0.96
	WEEE	3.52	0.74	2.22	0.33	2.29
	Print cartridges	0.27				
	Box board		5.00	5.00	5.00	5.02
	Food waste (Composted)		4.82	2.49	0.51	0.32
	Sundries (Furniture etc.)		2.00	8.14	5.50	0.00
	<b>Subtotal: Recycled waste</b>	<b>63.54</b>	<b>36.93</b>	<b>37.30</b>	<b>19.84</b>	<b>15.39</b>
<b>Non-Hazardous: Landfill (Tonnes)</b>	Solid waste to landfill (bins)	54.31	2.57	3.04	5.11	11.29
	Solid waste to landfill (skips)	11.05	2.92	0.00	3.29	0.00
	<b>Subtotal: Waste to landfill</b>	<b>65.36</b>	<b>5.49</b>	<b>3.04</b>	<b>8.39</b>	<b>11.29</b>
<b>Non-financial indicators (Tonnes)</b>	<b>Total waste arisings</b>	<b>128.90</b>	<b>42.95</b>	<b>40.50</b>	<b>28.46</b>	<b>27.17</b>
	<b>% Waste recycled (SG &amp; SOGE)</b>	<b>49.3%</b>	<b>86.0%</b>	<b>92.1%</b>	<b>69.7%</b>	<b>56.7%</b>
	<b>% Waste to landfill (SG &amp; SOGE)</b>	<b>50.7%</b>	<b>12.8%</b>	<b>7.5%</b>	<b>29.5%</b>	<b>41.6%</b>
<b>Financial indicators</b>	<b>Total waste disposal cost</b>	£14,452	£19,409	£14,434	£10,230	£14,322
	<b>Total waste income</b>	£0	£0	£557	£0	£0
	<b>Balance disposal cost</b>	£14,452	£19,409	£13,878	£10,230	£14,322



**Figure 4 Total waste recycled / sent to landfill**

**Target:** To recycle **70%** of all waste arisings by 2025 with only **5%** of all waste arisings to go to landfill by 2025.

Although there was a decrease in total arisings of **4.5%**, **the amount of** waste to landfill increased by **12.1%** from 2018/19 totals, now sitting at **41.6%**. However, there is some way to go to achieve the target of **5%**.

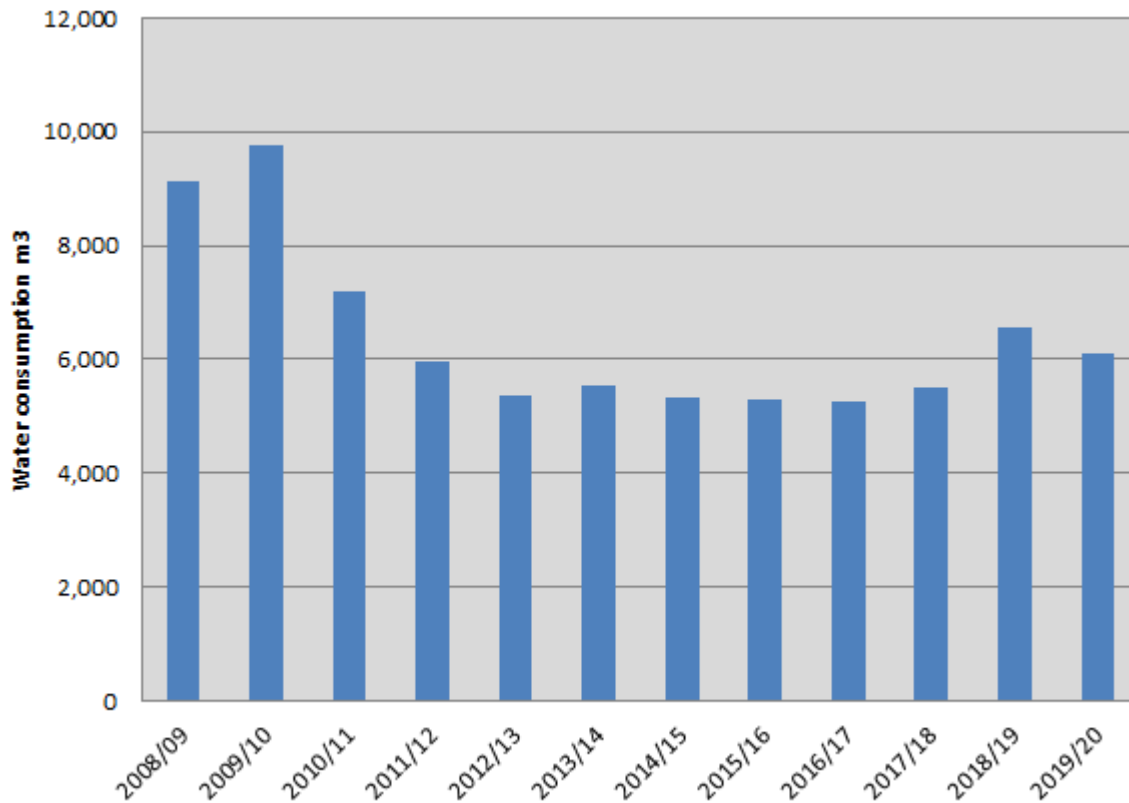
This is likely to be a focus of the new Climate Action Plan currently being developed. We are hoping that greater staff engagement will lead to an increased staff awareness in relation to the consequences of unused promotional materials and the creation of contaminated general waste due to incorrect separation at source.

**Direct impacts:**

Whilst better statistics are now being provided, confidential waste and waste to landfill still appear very difficult to reduce.

3.4 Water - Finite Resource Consumption		2008/09	2016/17	2017/18	2018/19	2019/20
Non-financial indicators (m3)	Supplied m3	9,124	5,271	5,499	6,569	6,099
	Disposed m3	8,668	5,007	5,224	6,240	5,794
Non-financial indicators (kg CO <sub>2</sub> e)	Sub-total	9,604	5,548	5,788	6,915	6,418

Financial indicators	Water supply & disposal costs	£63,803	£59,201	£55,743	£65,403	£94,226
		Total cost water / total water consumption m3	£6.993	£11.231	£10.137	£9.956



**Figure 5 Total water consumption**

**Target:** Reduce water consumption by **25%** in the office and non-office estate by 2020, relative to 2004/2005.

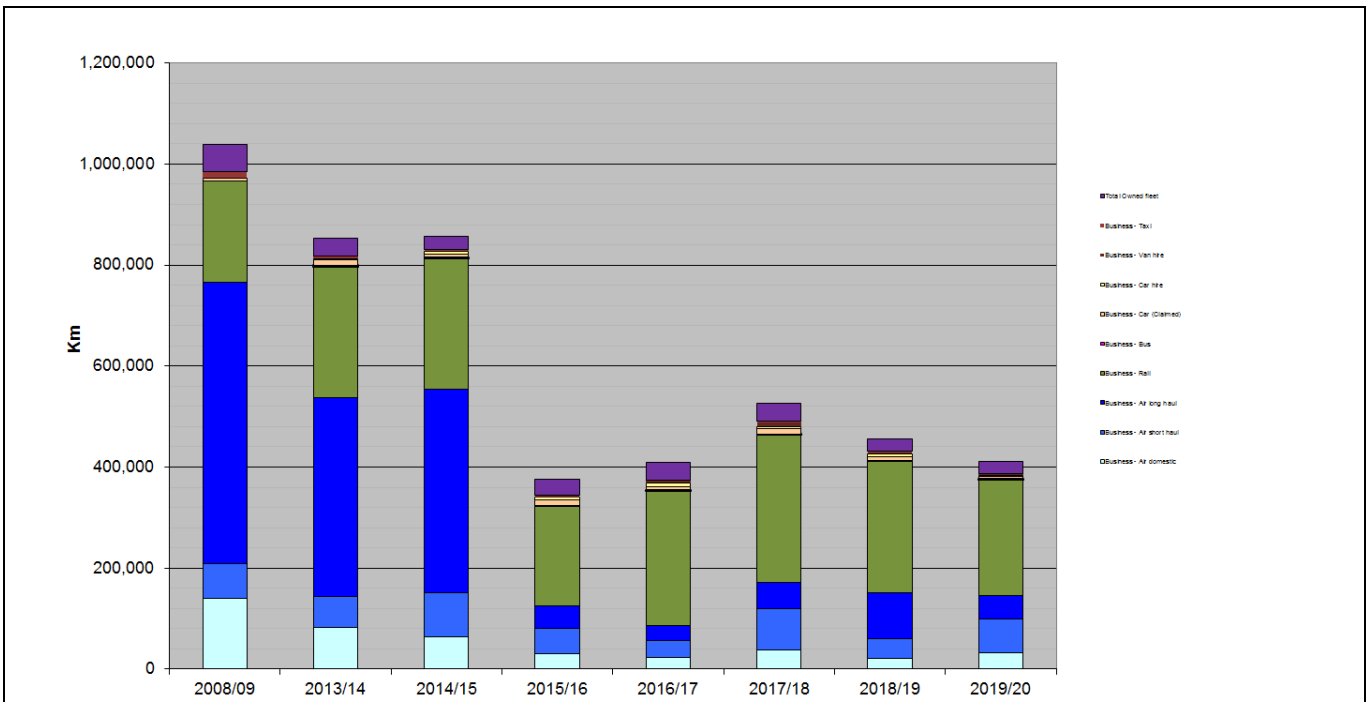
The Library has exceeded this target and will therefore consider a new meaningful target for water consumption within the new Climate Change Action Plan.

**Direct impacts:** Water consumption has been stabilised over the past number of years. As **54%** of all water consumption occurs in George IV Bridge, the Library's main public building, all future water saving initiatives will therefore be focused in this area.

<b>3.5 Transport &amp; travel</b>		<b>2008/09</b>	<b>2016/17</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>
<b>Non-financial indicators (Km )</b>	Owned fleet	54,247	35,016	35,838	23,944	23,430
	Business - Air domestic	140,000	23,934	37,292	21,479	32,873
	Business - Air short haul	68,952	32,394	81,708	38,681	67,185
	Business - Air long haul	556,692	30,137	52,576	91,417	44,965
	Business - Rail	200,540	266,342	291,545	260,585	228,998
	Business - Taxi	12,230	2,436	2,118	1,991	1,361
	Business - Car (Claimed)	6,198	6,922	10,726	7,056	4,124
	Business - Van hire	0	3,745	8,492	3,008	2,369
	Business - Car hire	0	7,165	5,018	5,515	2,976
	Business - Bus	0	1,683	1,623	1,282	2,784
	<b>Total travel Km</b>	<b>1,038,859</b>	<b>409,773</b>	<b>526,937</b>	<b>454,958</b>	<b>411,066</b>

<b>Financial indicators</b>	Total cost - Fleet maintenance & repairs	£4,768	£28,866	£3,713	£1,540	£3,675
	Total cost - Fleet insurance	£2,886	£3,232	£3,058	£2,463	£2,674
	Total cost - Fleet fuel	£5,184	£5,095	£4,267	£3,575	£3,453
	Total cost - Vehicle rental	£3,370	£1,836	£1,312	£1,124	£705
	Total - Taxi contract	£89,056	£2,546	£3,659	£3,007	£624
	Total - T & S		£143,107	£171,031	£151,345	£165,408
	<b>Total cost</b>	<b>£105,264</b>	<b>£184,681</b>	<b>£187,040</b>	<b>£163,054</b>	<b>£176,539</b>

<b>Non-financial indicators (Kg CO2)</b>	<b>Total Owned fleet</b>	<b>11,865</b>	<b>8,439</b>	<b>8,511</b>	<b>6,222</b>	<b>6,508</b>
	Business - Air domestic	26,751	6,670	9,973	6,408	8,380
	Business - Air short haul	7,388	5,348	12,947	6,280	10,637
	Business - Air long haul	67,111	4,423	7,949	19,432	8,796
	Business - Rail	12,073	13,011	13,638	11,528	9,423
	Business - Taxi	2,300	533	452	426	288
	Business - Car (Claimed)	1,266	1,228	1,864	1,225	715
	Business - Van hire	0	910	1,998	706	461
	Business - Car hire	0	1,271	872	957	516
	Business - Bus	0	202	167	129	292
	<b>Total Business travel</b>	<b>116,889</b>	<b>33,595</b>	<b>49,861</b>	<b>47,091</b>	<b>39,508</b>
	<b>Total travel Kg CO2e</b>	<b>128,754</b>	<b>42,034</b>	<b>58,372</b>	<b>53,313</b>	<b>46,016</b>



**Figure 6 Total transport and travel**

**Targets:** The Library does not have any specific travel targets, however green travel principles are embedded in the Library’s Business Travel and Expenses Policy, which provides guidance in the order of preference for mode of travel, i.e. walking/cycling; bus; rail; shared taxi; shared car; single occupancy taxi/car; air.

**Direct impacts:** Data collection continues to be very laborious and it is still not possible to separately identify travel costs from subsistence costs. (We now calculate the average travel miles in bus trips, car hire, car personal, air and rail journeys. In general the number of journeys by Library staff is known, but the travel distance is based on an average, calculated from the previous year’s mileage.

#### 4.0 Biodiversity Conservation Measures

The Library estate is located entirely on sites within city centres or satellite industrial estates. There are no activities discharged by the Library that have a direct connection to either the protection or the promotion of Biodiversity.

The Library therefore does not currently have a formal approach to meeting its duties as a public sector body to further the conservation of biodiversity when performing its functions, as required under the Nature Conservation (Scotland) Act 2004.

Biodiversity considerations only arise when the Library procures third party products and services. Any tests required to assure compliance follow the processes covered under the umbrella of Sustainable Procurement.

Although the nature of its estate and functions results in a limited opportunity to have a direct impact, this is currently under review.

#### 5.0 Sustainable Procurement

In accordance with the Library’s published procurement strategy:-

For each and every “Regulated” procurement consideration is given to, how in conducting the procurement process the Library can:-

- improve the economic, social and environmental well-being of the local and wider environment

- facilitate the involvement of small and medium enterprises, third sector bodies and supported business in the process
- promote innovation

In addition, consideration is given to including, where proportionate and relevant, a clause addressing Fair Work Practises, including the Living Wage.

Management Information in including but not exclusive to the list below is captured quarterly and will be made available in the procurement annual report to be published summer 2020; MI covering the period 1 April 2019 – 31 March 2020.

- direct expenditure with SMEs
- indirect spend with SMEs i.e. through the supply chain for Regulated procurements
- expenditure with Supported Businesses
- community benefits achieved through Regulated procurements

## 6.0 Sustainable Construction

The Library does not currently have a system in place for the management of construction waste; however quality evaluation of waste management performance are included at PQQ and ITT stage for major construction projects. The Library aims to report construction waste separately for these projects.

The Library is actively trying to improve the sustainability of its estate by incorporating energy saving measures in all new projects. The Library is in the process of obtaining BREEAM in Use assessments for its George IV Bridge and Causewayside properties, in order that it can evaluate the impact of these measures over time, following completion of the external refurbishment projects which are currently being undertaken.

## 7.0 Environmental Management System

In 2017 the Library through Zero Waste Scotland, became an Ambassador for Resource Efficiency in Scotland.

As an ambassador, the Library now forms part of a network of organisations recognised across Scotland for their passion and commitment to reducing resource use and protecting Scotland's environment and economy.

As part of the duties the Library promote the benefits of resource efficiency throughout Scotland, adopting a leadership position within our communities and encourage others to take action and play a key role in bringing resource efficiency messages to a wider audience.

The Library has also committed to take part in the ZWS Resource Efficiency Pledge scheme, the Library is presently working towards the Platinum award standard having achieved the bronze, silver and gold award standards.



## Annex A: Methodology

### A.1 Targets

The Library aims to act in a way which supports the progress of Scottish Government toward its National Outcomes. The Library targets are therefore based on targets set by Scottish Government where relevant. These targets are:

#### **The Climate Change (Scotland) Act 2009**

The Act commits Scotland to reduce its emissions by at least 80% from 1990 levels by 2050; with an interim emissions reduction target of at least 42% by 2020.

The Library's Carbon Management Plan sets five year targets, based on a portfolio of achievable projects with the objective of helping the organisation toward the 2050 target.

Note: The Library's baseline is 2008/09, not 1990, due to the fact that there is insufficient data to create a meaningful 1990 baseline.

#### **The Conserve and Save: Energy Efficiency Action Plan 2010**

The Energy Efficiency Action Plan requires that by 2020:

- The public sector will have reduced its energy consumption by at least 12% (already achieved);
- Individual public bodies will all have set, and be monitoring, their own ambitious annual energy efficiency targets (original target set in the 2010 carbon management plan of 30% reduction by 2015 – already achieved);

#### **Scotland's Zero Waste Plan 2010**

The plan sets a long term target for 2025 of recycling 70% of all Scotland's waste, and only 5% of the remaining waste going to landfill.

#### **Non Scottish Government targets**

Where Scottish Government targets do not exist, the Library has adopted other UK targets, such as the SOGE targets.

### A.2 Scope

The baseline includes all of the significant sources of CO<sub>2</sub> emissions from the delivery of organisation functions at all of its sites. The Library does not outsource any of its services off site. The baseline relates to the utilities used in its buildings, waste, and transport to deliver the functions of the organisation, but not the embedded emissions in the goods procured by the organisation. The baseline is made up of CO<sub>2</sub> emissions from:

- owned buildings energy use
- owned/Leased Fleet Fuel Use
- business travel
- waste produced by buildings and operations<sup>1</sup>
- water used in buildings and operations

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<sup>1</sup> Excluding waste from the Agency for Legal Deposit Libraries

### A.3 Baseline conversion factors

The data the DEFRA UK Government Conversion Factors for Company Reporting.

<http://www.ukconversionfactorscarbonsmart.co.uk/>

NOTE: DEFRA issues annual revision of historic conversion factors. In line with DEFRA guidance the Library recalculates all of its emissions using the revised factors.

The conversion factors, used to calculate the green house gas emissions within the report are provided in the table below.

DEFRA UK Government Conversion Factors for Company Reporting	2008/09	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Elec kg <sub>e</sub> /CO <sub>2</sub> per kWh	0.49608	0.49023	0.46219	0.41205	0.35156	0.28307	0.2556
Gas kg <sub>e</sub> /CO <sub>2</sub> per kWh	0.18500	0.18455	0.18445	0.20444	0.20463	0.18746	0.20428
Water kg <sub>e</sub> /CO <sub>2</sub> per m <sup>3</sup>	1.05000	1.05260	1.05260	1.05260	1.05260	1.05260	1.05260

Waste (kg CO <sub>2</sub> e per tonne)	Hazardous / special waste	Hazardous waste						
		Clinical waste						
Non-Hazardous: Re-used Recycled Composted	Aluminium & steel cans							
	Cardboard							
	Plastic bottles							
	Paper - General							
	Mixed recycling							
	Timber							
	Paper - Confidential		21	21	21	21	21	21
	Metal							
	Glass							
	WEEE							
	Print cartridges							
	Box board							
	Food waste							
Sundries (Furniture etc.)								
Non-Hazardous: Landfill	Solid waste to landfill (bins) - Mixed municipal	290	290	290	290	290	290	290
	Solid waste to landfill (skips) - Mixed industrial	199	199	199	199	199	199	199

Transport & travel (Kg CO <sub>2</sub> e per v Km)	Medium diesel car 1.7 to 2.0 ltr	0.18095						
	Diesel van Class I up to 1.305t	0.15678	0.15346	0.14447	0.15438	0.14958	0.14918	0.14955
	Diesel van Class III 1.74t - 3.5t	0.27011	0.26881	0.26774	0.28453	0.27565	0.27491	0.27777
	Car: Average unknown fuel	0.20459	0.17720	0.17561	0.17741	0.1738	0.17353	0.17336
	Taxi: Black cab	0.24329	0.21877	0.21872	0.21884	0.21337	0.2142	0.21176
	Air: Domestic	0.16484	0.29316	0.29795	0.27867	0.26744	0.29832	0.25493
	Air: Short haul	0.09229	0.15835	0.16634	0.16508	0.15845	0.16236	0.15832
	Air: Long haul	0.08137	0.15054	0.15175	0.14678	0.15119	0.21256	0.19562
	Rail	0.05649	0.04738	0.04505	0.04885	0.04678	0.04424	0.04115
	Bus	0.03064	0.10946	0.10883	0.11986	0.10259	0.10097	0.10471

## A.4 Baseline data sources

The baseline data was taken for the financial year 2008/09.

### Stationary sources – Electricity and Gas

Energy consumption data is gathered from weekly meter readings taken at each of the Library's property assets.

### Waste

The waste data for the baseline period was compiled by converting volumetric data into tonnage equivalents, based on a waste mapping exercise conducted by Changeworks Recycling and the Library calculation of waste recycled and disposed.

From October 2009 the Library started to weigh the majority of its waste on site and data from this source is therefore significantly more accurate. The practice of weighing waste ceased at the commencement of the CB refurbishment project in January 2014 due to access difficulties. To enable greater accuracy to be achieved once more the Library plan is to start again weighting the waste before uplifts.

During 2018/19 there were problems with a backlog of general waste therefore those uplifts increased from 1 uplift per week of 2 bins to 2 uplifts per week of 3 bins. This meant that data from the waste provider increased. In addition, skips of construction waste increased during 2018/19 due to SB Roof project in general waste data.

### Water

Water consumption data is gathered from weekly meter readings taken at each of the Library property assets.

### Transport

Fleet travel data is compiled from mileage log sheets for each fleet vehicle.

Business travel data prior to 2010/11 was taken from business expense claim forms and procurement card log sheets. Where departure and destination information was not provided the following assumptions for a typical generic journey were made to calculate the mileage:

- Train £3 - £20 = Edinburgh to Glasgow return
- Train £21 - £50 = Edinburgh to Dundee return

From 2010/11 Business travel data for journeys over £50 is as provided by the Scottish Government travel management service. Travel data below £50 continues to be collated from business expense claim forms and procurement card log sheets. Due to the introduction of new claim forms which capture travel information, journeys where the departure and arrival details cannot be identified have reduced.

Business travel costs continue to be inclusive of subsistence due to difficulties in separating the information. Separate cost codes are required to resolve this problem.

Taxi data prior to 2011/12 was calculated by using a conversion factor of £1 = 1 kilometer.

Taxi data for 2011/12 is as provided by the Scottish Government taxi provider.

Claimed car mileage is as recorded on expense claim forms.

Car hire data is as provided by the Scottish Government vehicle hire provider.