

## CARBON EMISSIONS:

The following spread sheet was completed during a Carbon Neutral Strategy Workshop with Great South on 4<sup>th</sup> of June 2020

Summary of total emissions					
Total calculated emissions based on user input into worksheets					
Default scope	Emission source	kg CO <sub>2</sub> -e	kg CO <sub>2</sub>	kg CH <sub>4</sub>	kg N <sub>2</sub> O
Scope 1	Fuel	234.4	3015.5	202.2	32.1
Scope 3	T&D losses	21.6	20.6	1.0	0.0
Scope 2	Purchased energy	284.9	271.8	12.8	0.3
Scope 1	Refrigerant use	0.0	n/a	n/a	n/a
Scope 3	Travel	618.7	591.6	7.0	20.1
Scope 3	Freight transport	0.0	0.0	0.0	0.0
Scope 3	Water supply and wastewater treatment	0.4	0.0	0.4	0.0
Scope 3	Waste	32.3	0.0	28.6	3.7
Scope 3	Materials	0.0	0.0	0.0	0.0
Scope 1	Agriculture, forestry and other lands	0.0	0.0	0.0	0.0
<b>Total GHG Inventory Emissions</b>		<b>1192.3</b>	<b>3899.5</b>	<b>252.0</b>	<b>56.2</b>
<b>Total scope 1</b>		<b>234.4</b>	<b>3015.5</b>	<b>202.2</b>	<b>32.1</b>
<b>Total scope 2</b>		<b>284.9</b>	<b>271.8</b>	<b>12.8</b>	<b>0.3</b>
<b>Total scope 3</b>		<b>673.0</b>	<b>612.2</b>	<b>37.0</b>	<b>23.8</b>

Earthlore's total CO<sub>2</sub> emissions per year = 1192.3 kg or 1.1923 tonnes

CARBON SEQUESTERED IN HABITAT: the below table was calculated using the Trees that Count calculator.

<https://www.treesthatcount.co.nz/native-trees-carbon-calculator#calculator>

**Stems** ⓘ

No. of stems planted \*

Age of stand (years) \*

**Planting mix** ⓘ

Trees (%)

Shrubs (%)

**Calculate**   **Reset**

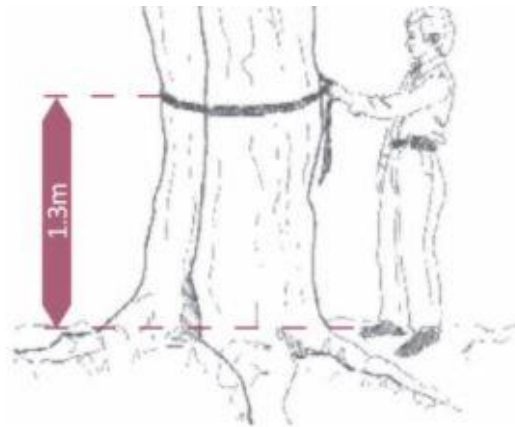
CO<sub>2</sub> expected to be removed

**331.76 tCO<sub>2</sub>**

There is 18 trees with a circumference of 3m = dry weight of 121410kg x 50% = 6205kg per tree x 3.67 = 22772.35 kg CO<sub>2</sub> = 22.77235 x 18 = 4099.02kg = 4.09 tonnes CO<sub>2</sub> sequestered in the mature conifers, estimated using the below formula.

<https://rgsgeogy.wordpress.com/mrcs-tree-carbon-content-calculator/>

- 1 Measure the circumference of the tree at the standard chest height (1.3m) with a tape measure. Record the result in centimetres. Repeat at least 3 times, at the same height, and calculate the average measure.
- 2 When you've got your average circumference, look at the table to convert this to dry weight. Use the nearest value in the table to your value.
- 3 Because half the dry weight of the tree is carbon, you then need to divide your answer by 2. This tells you how much carbon is stored in the tree.
- 4 You can also calculate how much carbon dioxide was absorbed to create this carbon store, by multiplying your figure for carbon by 3.67.



Circumference (cm)	Tree dry weight (kg)
50	106
100	668
150	1,964
200	4,221
225	5,771
250	7,641
275	9,842
300	12,410
325	15,350
350	18,700
400	26,674

These values, provided by Forest Research, are for an individual hardwood

As the carbon content of a tree is approximately 50% of the biomass, we can estimate the carbon content by calculating the mass of the tree and dividing the dry weight by two. The CO<sub>2</sub> captured by the tree in its life time is calculated by multiplying the carbon content by 3.67. Bingo! = CO<sub>2</sub> sequestered by the tree.

*What is the advantage of this "easy" method of calculating carbon sequestration in trees?*

*Surrey has 42,000 hectares of WOODLAND... it is one of the most forested counties in the UK. It has been calculated that the trees in Surrey remove 350,000 tonnes of carbon per year.*

80 Blue Gums along the boundary with an average circumference of 2-5 metres and a height of 20 metres –  $7,641 \times 50\%$  = dry weight of 382-5 kg dry weight, multiplied by 3-67 = 1.40377 tonnes per tree or total of 11.23 tonnes CO<sub>2</sub>

Total CO<sub>2</sub> stored to date: 347.08 tonnes