

# WATERFALL

STUDIO OLAFUR ELIASSON

*Waterfall* is part of Olafur Eliasson's major exhibition showing at Tate Modern between July 2019 and January 2020. Julie's Bicycle has calculated the carbon footprint for *Waterfall*, having previously footprinted Eliasson's artwork *Ice Watch* at Tate Modern and Bloomberg in December 2018, and at the COP 21 climate talks in Paris, 2015. Much of Olafur Eliasson's work explores social and environmental themes, creating the space to reflect, rethink and rehearse new ways of being with each other and the wider world. Rethinking arts practice to be more environmentally sustainable is a vital response to the climate and ecological emergency.



## MAP KEY

- Testing
- Install
- De-install

Julie's Bicycle  
CREATIVE • CLIMATE • ACTION

The carbon footprint was calculated by Julie's Bicycle, a charity with 12 years' experience supporting the creative community across the UK to take direct action on climate change and the environment: [juliesbicycle.com](http://juliesbicycle.com)

## FOOTPRINT

30

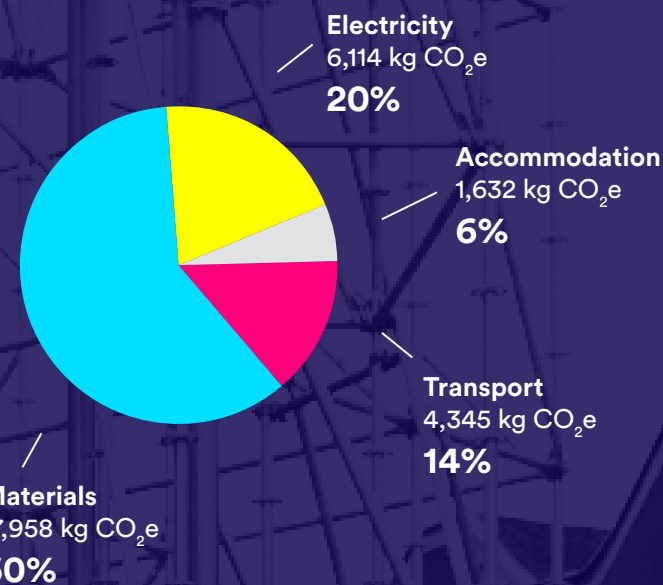
TONNES CO<sub>2</sub>e  
30,049 KG



## WATER LOSS

534,000 m<sup>3</sup>

over 178 exhibition days





## TRANSPORT

*Waterfall* had a test phase in Berlin with the Tate Exhibition and fabricator personnel from London flying and Extertal driving respectively. *Waterfall* was trucked to London and personnel flew from Frankfurt in the install and de-install stages. In the de-install phase, the artwork was trucked to Berlin and fabricator personnel flew return to Fankfurt (nearest airport to Extertal).

Description	Source	Distance	Factor, kg CO <sub>2</sub> e/km	Emissions kg CO <sub>2</sub> e
Transportation of <i>Waterfall</i> artwork and fabricators from Extertal to Berlin return	1 truck for artwork 1 van for personnel	700 km 700 km	0.68567 0.2568	480 kg 180 kg
Transportation of <i>Waterfall</i> artwork from Extertal to London one-way	1 truck for artwork	757 km	0.68567	519 kg
Transportation of <i>Waterfall</i> artwork from London to Berlin one-way	1 truck for artwork	1,096 km	0.68567	751 kg
Tate Exhibition personnel travel London to Berlin return	2 personnel short-haul return flights	3,800 km	0.1597	607 kg
Fabricators (5) travel from Frankfurt to London return	5 personnel short-haul return flights	5,660 km	0.1597	904 kg
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**4,345 kg CO<sub>2</sub>e**

To circulate the water, two pumps will be in operation during the opening times of exhibition. The water is recycled through *Waterfall*, however, there is ~3 m<sup>3</sup> water loss per day from spray and evaporation.

Description	Source	Quantity	Factor, kg CO <sub>2</sub> e/km	Emissions kg CO <sub>2</sub> e
Electrical pumps to circulate water from 9th July 2019 to 5th January 2020	1st pump: 2 x 3 kw 2nd pump: 1 x 7.5 kw	21,600 kWh	0.2831	6,114 kg

**6,114 kg CO<sub>2</sub>e**



## POWER

## MATERIALS

*Waterfall* is constructed primarily from steel. The carbon emissions from the production of these materials has been calculated. After de-installation, the materials will be kept in storage and re-used, not resold.

Description	Source	Quantity	Factor, kg CO <sub>2</sub> e/km	Emissions kg CO <sub>2</sub> e
Scaffold	Galvanized steel	2,800 kg	1.46	4,088 kg
Sub-construction	Galvanized steel	8,500 kg	1.46	12,410 kg
Basin	Stainless steel, printing plates, fleece PVC sheet	1,000 kg	Steel: 1.46 Wood: ~1.0 PVC: 3.1	1,460 kg

**17,958 kg CO<sub>2</sub>e**

In the test phase personnel from Tate and the fabricators in Extertal stayed in hotel accommodation in Berlin. In the install and de-install phases, dedicated personnel from the fabricators stayed in hotel accommodation in London.

Description	Source	Quantity	Factor, kg CO <sub>2</sub> e/km	Emissions kg CO <sub>2</sub> e
Tate personnel and fabricators personnel accommodation in Berlin	2 people x 1 night 2 people x 5 nights	12 hotel nights	32.63	392 kg
Fabricators personnel accommodation in London	3 people x 5 nights 2 people x 2 nights	19 nights	32.63	620 kg
Fabricators personnel accommodation in London	3 people x 5 nights 2 people x 2 nights	19 nights	32.63	620 kg

**1,632 kg CO<sub>2</sub>e**

The greenhouse gas emissions factors published by The UK Department of Business, Energy and Industrial Strategy in 2018 were used to calculate the carbon emissions from each area. The scope of these calculations include the preparatory, exhibition and de-installation stages of *Waterfall* at Tate Modern in London. \*\*1,000 kg = 1 tonne

## ACCOMMODATION