ELEPHANT FAMILY
Protecting Asian wildlife and its habitat

British Asian Trust

CoExistence

Elephant Family and British Asian Trust

Carbon Emissions Assessment

July 2021

Julie's Bicycle

CREATIVE • CLIMATE • ACTION

The preparation of this Report by Julie's Bicycle in collaboration with the Elephant Family has been undertaken within the terms of the proposal using all reasonable skill and care. Julie's Bicycle will neither take responsibility for the data provided by other bodies nor be subject to legal liability arising from the use by other persons of data or opinions contained in this Report.

Content

1. Context

The CoExistence project, conceived by Elephant Family in partnership with The Real Elephant Collective is a campaign to raise awareness of the need for humans and wildlife to exist side by side, and to live and thrive in harmony. With habitats shrinking and populations expanding, finding better ways for humans and wildlife to live alongside each other is our only option.

The 100 strong herd of life-sized elephants are modelled on real wild elephants from the Nilgiri Hills in Southern India. They have been created deep in the jungles of Tamil Nadu, by the Adivasi tribal communities who live in close proximity to their real-life counterparts. The material they are made from, lantana camara, is an invasive weed whose removal from protected areas benefits wildlife, leaving more space to roam.

India is one of the most biodiverse countries in the world, here people live alongside the largest populations of wild elephants, tigers, and leopards in the highest densities on the planet. However, with ongoing ecological degradation and habitat for wild animals shrinking at an alarming rate, conflict between people and nature affects 90% of the country.

"I hope that CoExistence reminds us of the awe we feel when in the company of wild, free animals and inspires us to better share our world with them." Ruth Ganesh, Elephant Family and BAT Trustee, Co-Creator of CoExistence

2. Executive Summary

Julie's Bicycle prepared this assessment to calculate the carbon emissions from the CoExistence exhibition.

This assessment takes into consideration the information provided for a total of 114 elephants sculptures with 11 males, 44 females, 30 adolescents and 15 calves. The calculations include a number of key contributing factors including

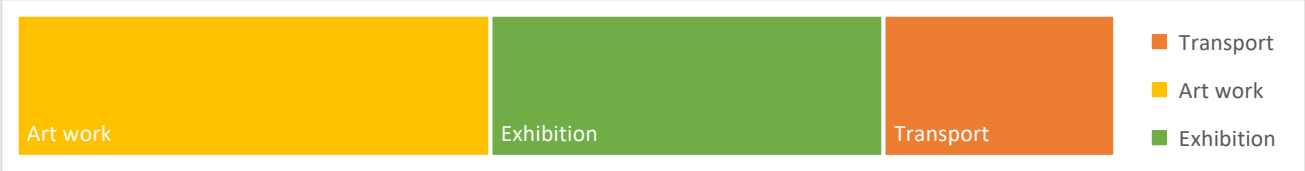
- materials used in the creation and installation of the artwork
- There is a review on the transport emissions as well.

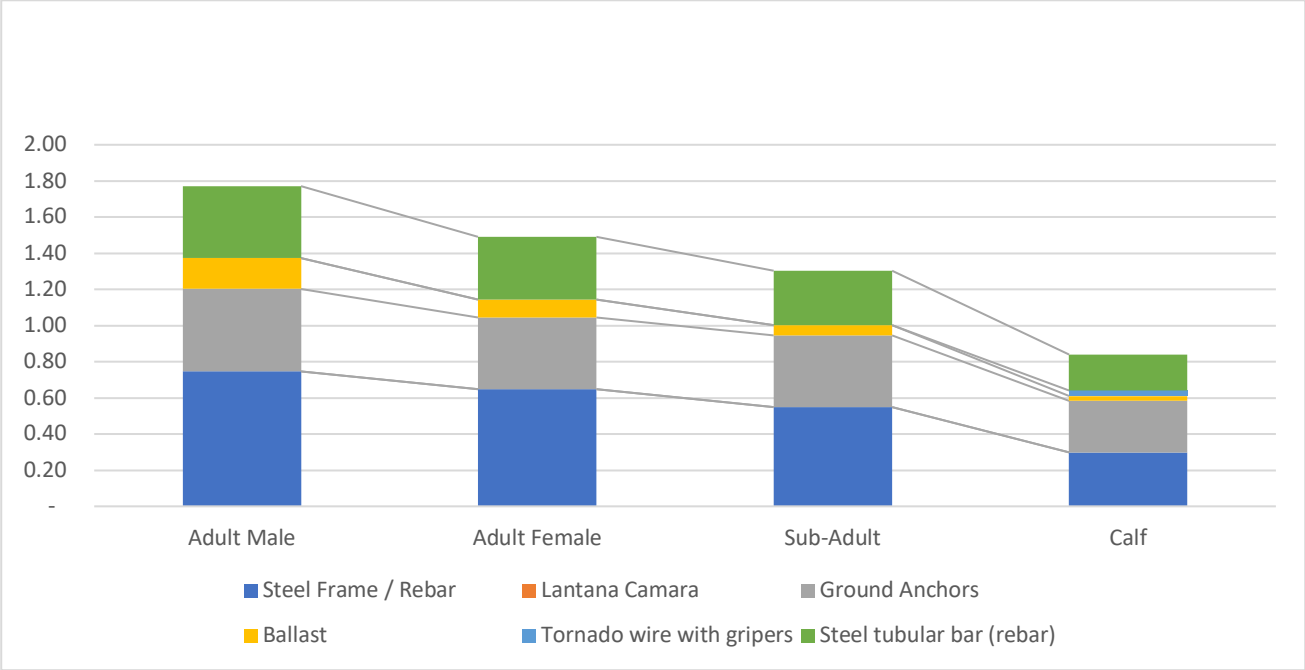
Information was collected on each typical activity area, energy source, amount of equipment, power demand and distance travelled. The UK Department for Business, Energy & Industrial Strategy (BEIS, 2020) has published greenhouse gas emission factors which have been used to calculate carbon emissions for all regions. This report is based on the BEIS guidelines and the ICE DB v3 to calculate the embodied carbon emissions associated to the CoExistence.

There are some limitations, for instance, the energy used to create the parts was not available at the time of this assessment. However, this report presents a fair representation of the carbon emitted by the CoExistence Exhibition. but data available for analysis concluded that the exhibition was responsible for a total carbon emissions of 133 tonnes of CO2e. This is equivalent to just over 8 average households in a year in the UK.

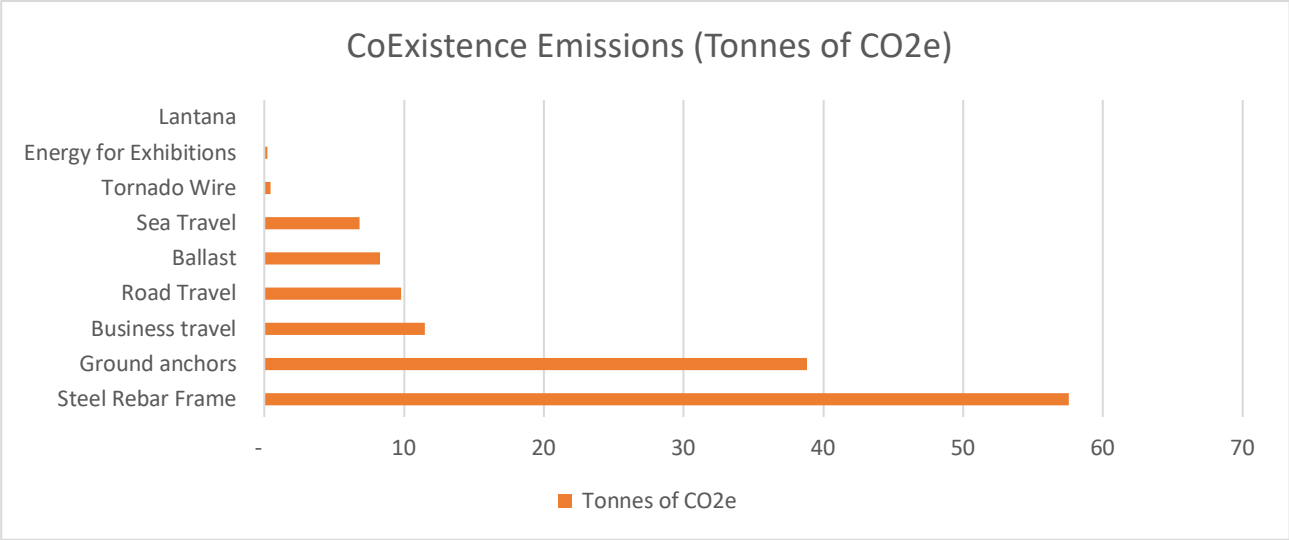
Total Carbon Emissions
133 Tonnes of CO_2e

The scope for measuring the carbon emissions of CoExistence was:





Graph 1- Carbon Emissions per Elephant Sculpture



Graph 2- Carbon Emissions by Contribution Factor

3. The Exhibit

CoExistence, a public art exhibition was located in a number of the Royal Parks in London over the summer of 2021 from mid-May to July end, including The Mall, Chelsea, St James's Park and Green Park. The largest herd was in Green Park, down the iconic Broad Walk and towards Buckingham Palace. The second herd meandered around St James's Park Lake, which became their watering hole. The final herd was in Berkeley Square.

These 100 life-size elephants transformed these parks into the Nilgiri Hills of Southern India, where their real-life counterparts roam a matrix of forests, farmlands, and towns. This monumental installation was intended to trigger a moment of collective empathy for the world's biggest and most intelligent animal, that, like so many awe-inspiring creatures, is now living in human dominated landscapes. These lantana elephants will travel the world to remind us to live well surrounded by nature. There are ways in which we should increase our CoExistence everywhere.

The CoExistence project intends to change the conversation to value the human connection with nature and celebrate all the life forms around us by sharing space.

"The willingness to negotiate is the key to a wholesome / sustainable relationship…As these Lantana elephants travel around the world, they call on people to live well with nature around them, carrying the stories and knowledge of how they live with people."
Ruth Ganesh, Elephant Family and BAT Trustee, Co-Creator of CoExistence

4. The Carbon Profile

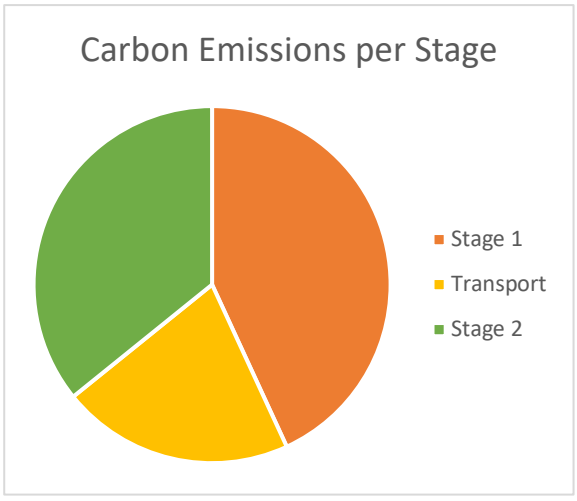
This assessment has reviewed the carbon emissions resulting from 2 stages and transport as follows:

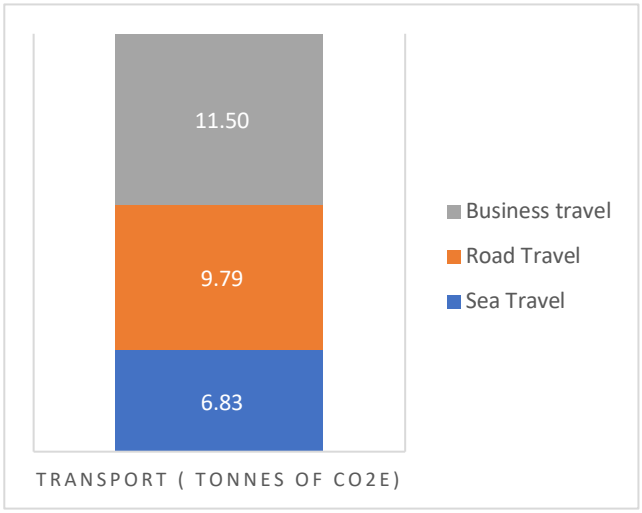
Stage 1
This stage is related to the creation of the pieces that will form the artwork. We calculate the embodied carbon of the materials used in the artwork. The energy usage was not available and was not considered.

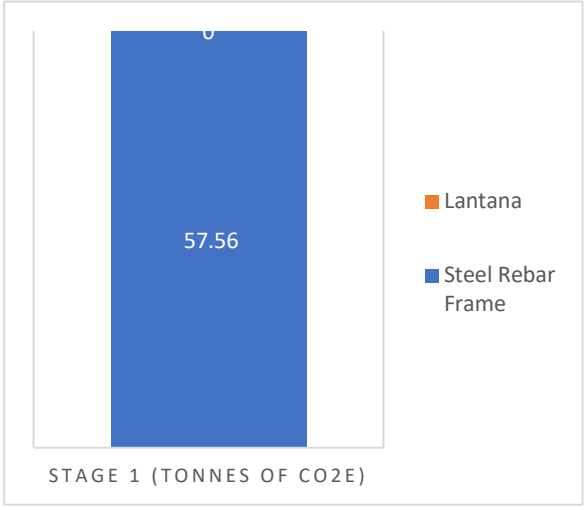
Transport
Emissions related to the pieces transport and travel of team members. It is important to note that the equivalent carbon emissions on business class travel are 3 times higher than in economy class on long-haul flights. Packaging used for transport was re-usable and provided by the transport company.

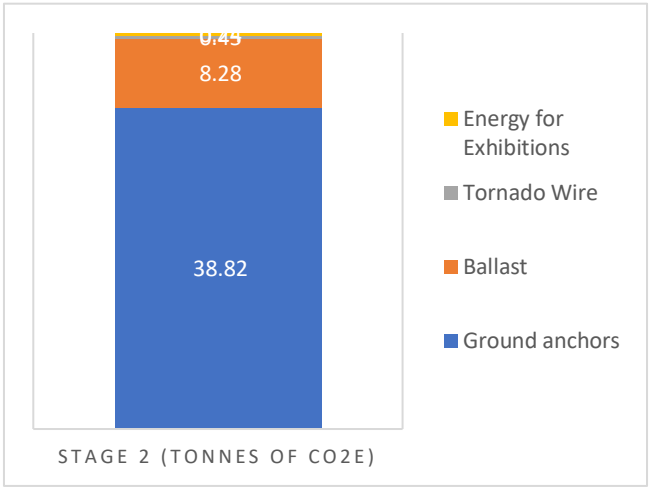
Stage 2
This stage estimates the carbon emissions related to the exhibitions. It includes some installation features, team travel and fuels used to run the exhibitions.

Limitations
Wider limitations are presented in Appendix A. This assessment has considered and analysed the data made available by Elephant Family at the time of this assessment. It is recommended to perform a thorough review of materials and processes to ensure that all carbon emissions are included to increase accuracy. Packaging and waste were not included in the scope of this assessment.









5. Carbon Footprint Results

The tables below present the carbon emissions included in the calculations.

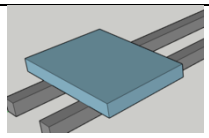
Stage 1 – Carbon emissions associated with the creation of the artwork

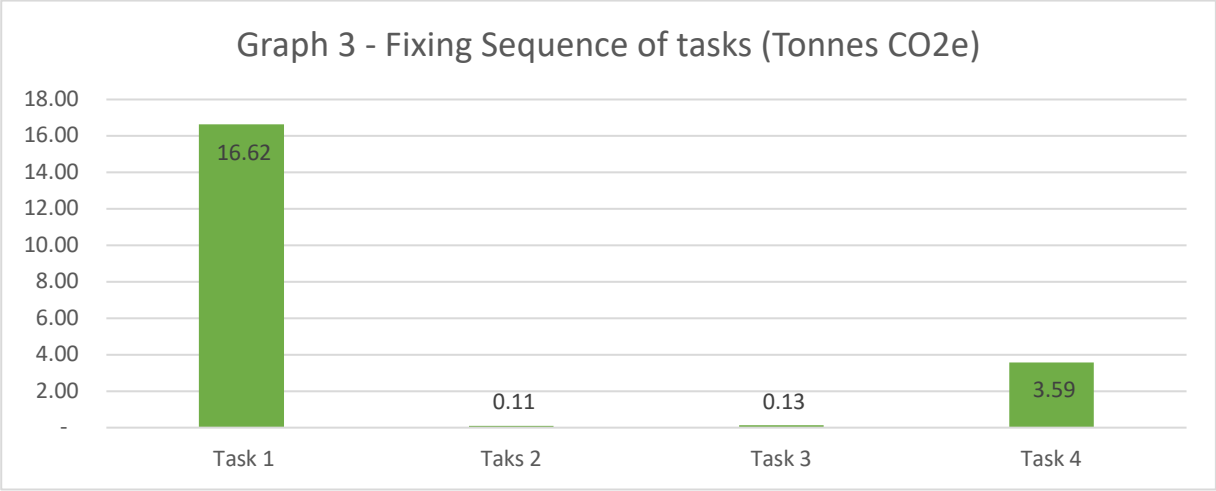
	Description	Quantity	Emissions Factor	Tonnes of CO_2e
Steel Rebar Frame	 Rebar requires skilful bending and binding of steel bars which are arranged in a variety of patterns. It is often used because it strengthens and holds the components together, creating an augmented structure.	28,925 Kg	Steel Rebar, ICE DB V3.0	57.56
Lantana camara	 This is an invasive weed that grows in India. A recent study published in Global Ecology and Conservation reports that lantana occupies 154,000 sq.km of forests (over 40 percent by area) in India's tiger range. Among forests, Shivalik Hills in the North, fragmented deciduous forests of Central India and Southern western Ghats are the most affected by its invasion. The process of transformation and use is not included.	12,525 Kg	-	-

Transport- Carbon emissions associated with transport

	Description	Quantity (distance in Km)	Emissions Factor	Tonnes of CO_2e
Sea freighting	 Transport by sea	9,377	Transport report	6.83
Road freighting	 Transport by road	630	Transport report	9.79
Business travel	 Air travel	37,795	BEIS	11.50

Stage 2 – Carbon Emissions associated with the Exhibition

	Description	Quantity	Emissions Factor	Tonnes of CO_2e
Ground anchors	 These are versatile devices used to hold, restrain and support building, civil engineering and other structures, either permanently or temporarily. As they create minimal soil disturbance during installation and can be stressed to an exact holding capacity, they offer a popular technique for anchoring a wide range of structures	55,275 Kg	Steel - hot-dip galvanized steel, ICE DB3.0	126.03
Ballast	 Heavy material used to stabilize the art work.	176,825 Kg	30% - Aggregate Sand, land won gravel and sand 70% Concrete GEN0 (6/8 Mpa)	8.28
Tornado Wire with gripers	 It is a metal in the form of a usually very flexible thread or slender.	200 Kg	Steel - Wire rod, ICE DB V3.0	0.45
Energy for exhibitions	 Energy used in to install and display the exhibitions (Diesel only - e.g. lighting, projector, crane etc).	90 Litres	BEIS - 100% Mineral Diesel	0.24



Graph 3 The graph below shows the carbon emissions for the sequence of task for fixing.

Task 1 refers to '*Vehicles arrive on site*'. Task 2 considers the '*Telehandler and vehicles tail lifts used to unload elephants*. Task 3 is responsible for '*Elephants transported by Telehandler/forklift or manpower to installation area' and* task 4 adds the CO_2e related to '*Use appropriate fixings to weigh elephants down*'.

6. Offsetting

Climate change is one of the greatest challenges facing humanity today. Most progressive organizations, corporations, and governments have already begun taking action to tackle climate change by reducing their carbon emissions.

Julies Bicycle together with Arts Council England are about to publish a report that provides an overview of carbon offsets, its definition, and alternative models. Carbon offsetting means 'balancing,' 'compensating,' or 'neutralizing' the carbon emissions from a given activity by paying into a scheme or project which will reduce emissions elsewhere. They are generated from projects that reduce the amount of greenhouse gases entering the atmosphere. To be considered an offset, the reductions achieved by a project need to be additional to what would have happened in the absence of the project, a condition defined as "additionality".

Carbon pricing ranges from a few dollars per ton to over $200, and the carbon credits (or carbon offsets) can be used for compliance as well as for voluntary purposes. It is also known that organizations around the world have started to use offsets as a voluntary way to reduce their carbon emissions indirectly. This has created a voluntary offset market commonly known as the "offsetting market".

There are four main strategies for "pricing in" carbon that can be considered:

- **buying certified carbon credits/offsets**
- **do-it-yourself (setting your own price per tonne of CO_2)**
- **"inset" (setting an internal price per tonne of CO_2)**
- **investing directly into a project with an environmental and financial return, such as buying community energy shares.**

The pros and cons of each approach are analysed in this Report. Offsetting or other ways of 'pricing in' carbon emissions should always be seen as a "last resort," only to be applied after all appropriate measures to avoid and minimise adverse impacts have been taken.

This Report also draws attention to the challenges of offsetting, such as calculating the organisation's carbon footprint, buying good quality offsets, and communicating accurately what has been achieved to avoid the risk of reputational damage. To overcome these challenges, it is recommended developing your own strategy following the steps: first, measuring the emissions; then, using the climate strategy hierarchy and deciding on an approach for pricing in remaining emissions. Finally, this report will serve as a basis for understanding carbon offset and its approach.

7. Conclusion

CoExistence is committed to creating a sustainable development (appendix B). Julies Bicycle was appointed to review the exhibition and art-work's carbon emissions performance. The dataset analysed was provided by the Elephant Family. The Carbon emissions were based on the UK Government conversion factors for company reporting of greenhouse gas emissions if not provided.

An introduction to CoExistence is presented. Then, the carbon profile is discussed. Total carbon emissions given the available data are 133 tonnes of CO_2e. Lantana, an invasive species from India, which was considered without carbon intensity for this study, was used. We went through every stage of the art-work process, from inception to transport and installation with limitations. This study provides information to understand CoExistence's carbon emissions and recommends deeper analysis to increase accuracy of the analyses.

This report presents a professional representation of the carbon emissions associated to CoExistence with constraints. The offsetting section introduces the topic and presents guidance on how to approach offsetting. Thus, before considering offsetting it is more effective to find solutions that could reduce emissions by adopting waste and transport hierarchy (Appendix C and D), monitoring energy consumption (creation and exhibition) - Appendix E presents a template for monitoring - and the use of smart materials such as Lantana.

DO

MEASURE: Calculate your carbon footprint using the Julie's Bicycle free online CG Tools to measure the carbon impact of your activities and buildings (ig-tools.com/login).

APPLY: The climate hierarchy (see below) and plan to avoid and directly reduce emissions first.

PLAN: Develop a climate strategy and action plan that sets out emissions reductions targets. Focus on avoiding and reducing emissions first. If you choose to offset, be clear on your aims and the impact you want to make and research your approach carefully.

CHOOSE WISELY: Decide where to put your contribution and price it adequately – it doesn't have to be an 'official' offset.

VERIFY: Find a Gold Standard certified (or similar) carbon offset provider to ensure the investment is credible and verified.

ENGAGE: Use offsetting as a way to engage your organisation and audience in your wider environmental programme, the offsetting approach you're taking and why.

DON'T

UNDER VALUE carbon. There is no set price for one tonne of carbon and many offsetting providers set their prices too low to reflect the true social and environmental costs.

SUBSTITUTE: Don't use offsetting as a substitute for taking actions to reduce emissions at source.

MISCOMMUNICATE: If you are using offsetting as a way to claim 'net zero' or 'carbon neutral' then communicate clearly what emissions reductions have been achieved directly against those offset. Frame your climate strategy as a journey- we all have work to do.

PRESUME: That carbon offsets will undo or balance out your emissions tonne-for-tonne; all things considered, there's a good chance that this is an unrealistic expectation.

RUSH: Some websites offer a carbon offset option at point of purchase, but rather than a quick click, consider a coherent approach that captures all your impacts.

Extracted from: "Putting a Price on Carbon. From offsets to true value"

Appendix A - Limitations

The recommendations contained in this Report represent Julies Bicycle's professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Julies Bicycle do not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Julies Bicycle obtained, reviewed and evaluated information in preparing this Report from the Client and others. Julies Bicycle conclusions, opinions and recommendations has been determined using this information. Julies Bicycle do not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Julies Bicycle has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Julies Bicycle for the sole and exclusive use of the Client and for the specific purpose for which Julies Bicycle was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Julies Bicycle do not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Julies Bicycle from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Appendix B – United Nations Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations (UN) member states in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognise that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

Today, the Division for Sustainable Development Goals (DSDG) in the United Nations Department of Economic and Social Affairs (UNDESA) provides substantive support and capacity-building for the SDGs and their related thematic issues.

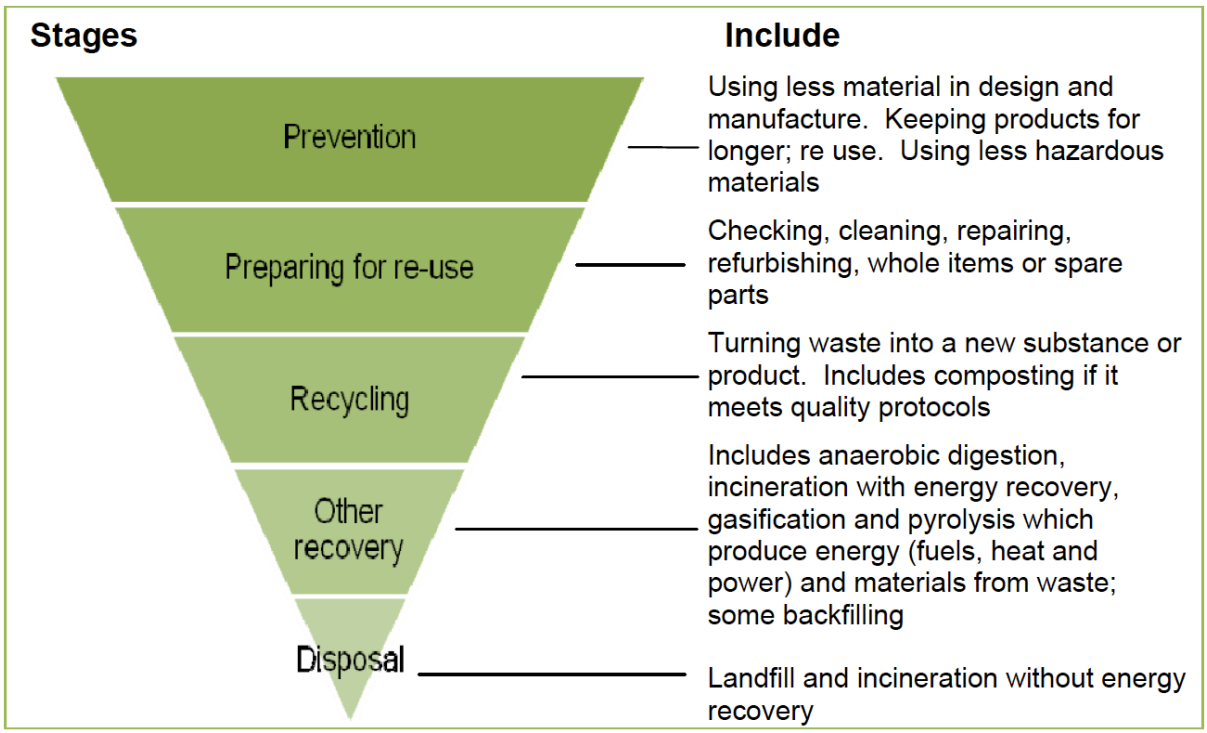
It includes water, energy, climate, oceans, urbanization, transport, science and technology, the Global Sustainable Development Report (GSDR), partnerships and Small Island Developing States.

DSDG plays a key role in the evaluation of UN systemwide implementation of the 2030 Agenda and on advocacy and outreach activities relating to the SDGs. In order to make the 2030 Agenda a reality, broad ownership of the SDGs must translate into a strong commitment by all stakeholders to implement the global goals. DSDG aims to help facilitate this engagement.

Source: https://sustainabledevelopment.un.org

Appendix C - Waste Hierarchy

The waste hierarchy ranks waste management options according to what is best for the environment. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g. landfill).

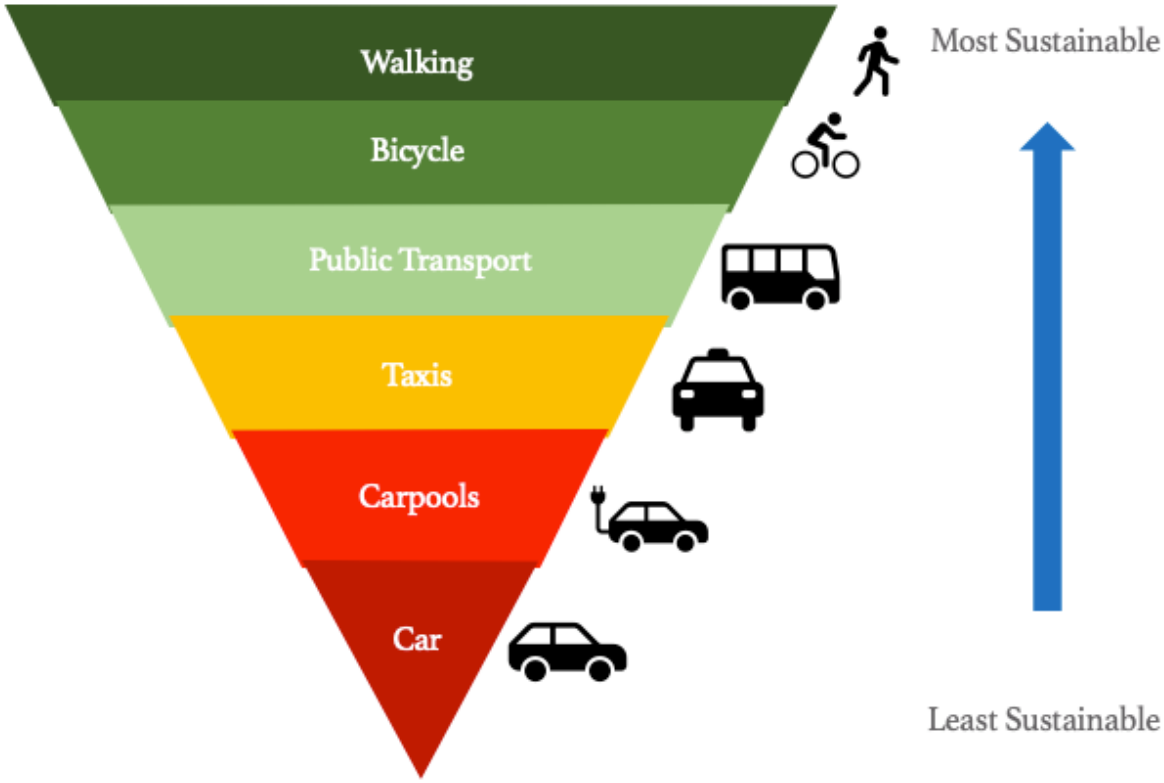


The waste hierarchy is set out at Article 4 of the revised Waste Framework (Directive 2008/98/EC). The definitions of each of the stages can be found in Article 3 of the Directive. Non-exhaustive lists of disposal and recovery operations can be found in Annexes I and II of the Directive, respectively.

Extracted from
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf

Appendix D – Transport Hierarchy

All staff and users should be encouraged to use sustainable modes of travel. Below is a diagram showing which methods of travel are most sustainable at the top (walking) to the least sustainable at the bottom (single occupancy car journeys).



By travelling in an environmentally friendly way, you can reduce your emissions footprint and lead a healthier lifestyle.

It is recommended that the Centre website presents different options on how to travel to the centre using different types of transport, such as walking, cycling, public transport (trains and buses), driving and other alternatives.

Appendix E – A Simple Energy and Water Monitoring Sheet

Annual Energy use and costs	Electricity		Gas		Water	
	Cost (£)	Use (kWh)	Cost (£)	Use (kWh)	Cost (£)	Use (Litres)
2017 – 2018						
Q1						
Q2						
Q3						
Q4						
Total						
2018 – 2019						
Q1						
Q2						
Q3						
Q4						
Total						
2019– 2020						
Q1						
Q2						
Q3						
Q4						
Total						
2020 – 2021						
Q1						
Q2						
Q3						
Q4						
Total						
2021 – 2022						
Q1						
Q2						
Q3						
Q4						
Total						