

## How to make horticultural operations in educational and conservational gardens more sustainable, ethical, and environmentally friendly

Written by Ella Bowditch and Haowen Wu



### Aim

This case study aims to encourage all public gardens and horticulturalist to collaboratively work together and foster collective learning to achieve climate friendly solutions which in turn can reduce their carbon footprint.

### Overview

We chose these two bespoke sites because of their large differences in plant collection, historic presence and educational message. By viewing how they both run horticultural operations differently, we aim to conclude in improvements for any type of horticultural establishment to use. It is noted that there is no bias between our answers as we want to showcase how all types of gardens can work independently yet encompass the same objective of inspiring people to stay connected with the natural world.

### Locations

The Sir Harold Hillier Gardens, Jermyns Lane, Romsey, Hampshire. SO51 0QA

The Eden Project, Bodelva, Par, Cornwall. PL24 2SG

### Dates

SHHG (14<sup>th</sup>- 25<sup>th</sup> Aug 2023)

Eden (13<sup>th</sup> – 24<sup>th</sup> Sep 2023)

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\*Note: we have written this report as a team, however there are some small details in our personal horticultural journeys and our individual reflections that are different. See Haowen's report for our differences\*

## **1. Personal Horticultural journey**

### ***Ella Bowditch***

I have been in the horticultural industry for three years now, working across different sectors. I have recently finished a one-year traineeship at the Sir Harold Hillier Gardens in Romsey, learning and studying a variety of horticultural practices and plant identification methods. I am currently studying towards my RHS Level 2 in my own time, alongside working full-time for a company providing horticultural services for established private estates.



I have a particular interest in Mediterranean shrubs and trees and aspire to start my own outdoor kitchen design company one day, focusing on connecting people with nature and to the organic foods that they eat. I also love blogging about interesting plants I find on my plants Instagram- [www.instagram.com/ellasplantas](https://www.instagram.com/ellasplantas).

My professional goal for this project is to be able to make a small step towards a greener climate. A personal goal of mine is to build my confidence as this whole project has been self-starting and totally out of my comfort zone.

## 2. What is Sustainability?



In 1987, the United Nations Brundtland Commission defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs”. In other words, not impacting future generations with our present actions, (United Nations, n.d.).

*Sustainability can be categorised into four principles, (RMIT University, 2017):*

1. *Human:* to maintain and improve the human capital in society.
2. *Social:* to preserve social capital by investing and creating services that constitute the framework of our society.
3. *Economic:* to improve the standard of living and to treat people fairly and not exploit them.
4. *Environmental:* to improve human welfare through the protection of natural capital (e.g. land, air, water, minerals etc.)

### Sustainability within agriculture/horticulture:

The recent Intergovernmental Panel on Climate Change (IPCC) report (Intergovernmental Panel on Climate Change, 2021) confirms that we are now in a climate crisis. It is crucial to understand the severity of sourcing crops internationally as opposed to homegrown food in terms of global environmental impact.

Food production accounts for over a quarter (26%) of global greenhouse gas emissions (52.3 billion tonnes of CO<sub>2</sub>) (Ritchie et al, 2022), this includes livestock and fisheries, land use, crop production and the supply chain.

Enabling horticulturists to garden without impacting the environment harmfully is of paramount importance in today's growing society. The ever-increasing threat of climate change can only be slowed down sufficiently if it becomes a priority in individual people and business values.

There are no outlined guidelines or sets of standards by which public gardens can abide to ensure every decision they make has the environment in mind. Of course, there is a great balancing act between what an organisation can achieve realistically against how much profit they are producing annually, resulting in how much they can invest back into their staff and their business.

Many large horticultural organisations and charities such as the RHS and Kew Gardens are taking positive steps looking at alternative solutions to reduce their carbon emissions by tapping into renewable energy technologies, such as wind farms, solar farms, and geothermal plants etc to eliminate their greenhouse gas emissions and become carbon positive. This infrastructure is extremely expensive to produce, and without major funding and public interest, most small public gardens cannot simply invest in this currently. However, by these larger organisations setting the standard, in doing so, other gardens can take smaller actions by following their principles to achieve a greener climate overall and hopefully one day achieve a similar result regarding their carbon footprint.

Global greenhouse gas emissions from food production

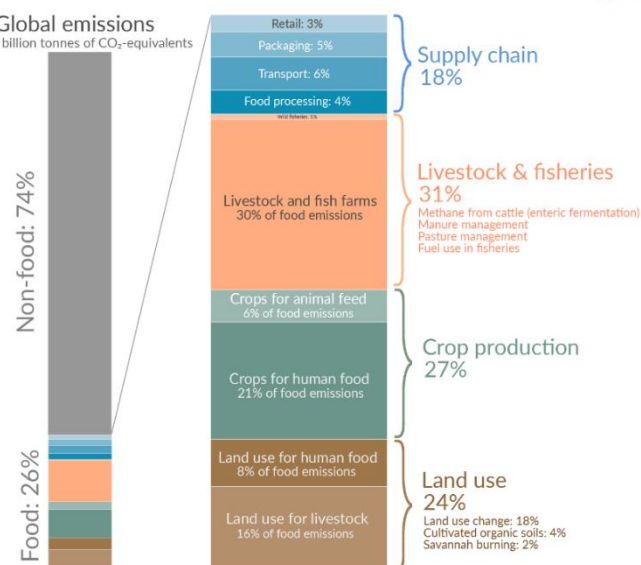


Figure 1. Global greenhouse gas emissions from food production.

*The main points/areas from the 2021 RHS Sustainability Strategy, (The Royal Horticultural Society, n.d.):*

- To capture and reduce more greenhouse gas emissions than the RHS value chain emits, without affecting the growth of the RHS.
- Reversing habitat destruction in gardens and community green spaces around the country; protecting and improving conditions for pollinators and other wildlife; and enhancing and conserving cultivated plant diversity for the future.
- Eliminating all single-use plastic; encouraging reduced plastic use; ensuring that all packaging is 100% reusable, recyclable or compostable in RHS operations and encouraging these gardening practices to members and visitors.
- All waste produce is reduced, reused, recycled, composted, or sent to energy recovery from all RHS operations, and gardeners and members of the public are encouraged to do the same in their gardening practices.
- To develop sustainable horticultural research and training, increasing the skills, knowledge and confidence of young people and adults to grow sustainably.

### 3. The Sir Harold Hillier Gardens

The Sir Harold Hillier Gardens are historical gardens and a former arboretum that focus on the conservation and education of hardy shrubs and trees in temperate climates. Located in Romsey, South Hampshire, with 14 National Collections and 600 champion trees including some wild collected species and 200 threatened plant species. Sir Harold Hillier was a third-generation nurseryman and plant collector who planted many rare and threatened species of trees and shrubs from all over the globe in his private garden. Later in 1977, he donated the gardens to Hampshire County Council to be the sole trustees and by doing so has helped preserve the history and stories of these hardy trees and shrubs today.

*The gardens have four primary areas of interest:*

- **Centenary border**

Opened by HRH Duchess of Cornwall in 2013, this is one of the longest double mixed borders in the country at 250 metres, alternating 22-yard bays, to reflect Sir Harold's interest in cricket, filled with a wide variety of spring/summer flowering plants such as herbaceous perennials, shrubs, and perennial bulbs.



SHHG Centenary boarder

- **Jerymns House**

Originally built in the early 18th century, and later formally lived in by Sir Harold Hillier, the surrounding gardens are filled with magnolias, dwarf conifers and metasequoias. Each year there is a formal display of annual bulbs in spring followed by annual flowers over summer. Gradually beds have been adapted to include scree styles of planting including alpine plants and Mediterranean plants.



SHHG Jerymns House



- **Pond/bog garden**

Built in the 1970's and fed by water from a local stream, the temperature change in this area is somewhat dramatic (varying 2-4 degrees colder than the average temperatures in winter). The pond garden is filled with herbaceous shade/humid tolerant plants such as Gunnera and Hosta's whilst showcasing the swamp loving Taxodium distichum.



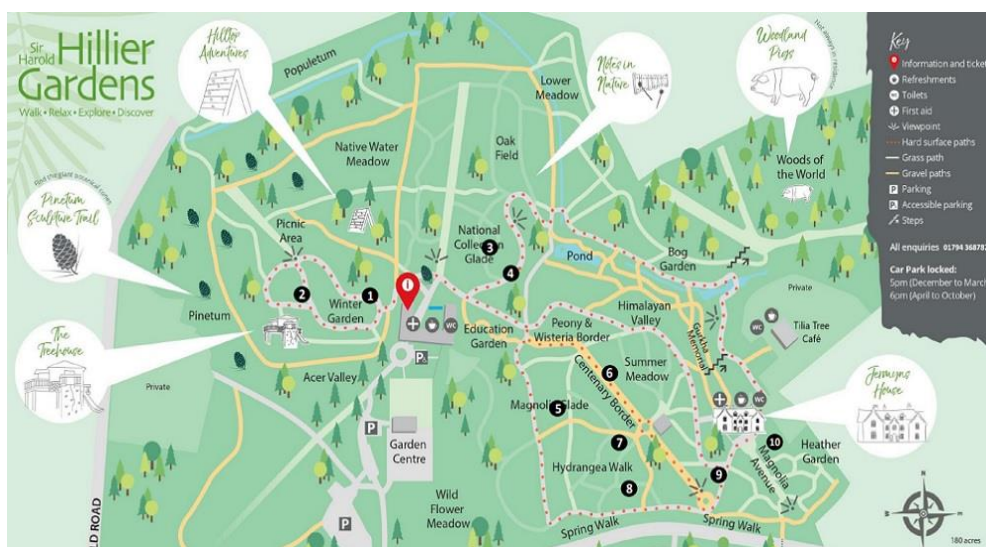
SHHG Bog Garden

- **Winter Garden**

Built 25 years ago this is one of the largest winter gardens in Europe, with over 650 types of plants for winter interest, including Cornus, Salix, Acers, Eranthis, Cyclamen and Galanthus, all of which add a variety of colour to the silent cold winters.



SHHG Winter Garden



Map of SHHG 2023



#### 4. The Eden Project-

Located in the clay district, Bodelva. The Eden Project is an educational charity and botanical gardens demonstrating the interdependence between plants and people and the importance of restoring nature. The project was conceived by Sir Tim Smit and designed by architect Sir Nicholas Grimshaw. It was built 22 years ago, in an old China clay pit which originally was a large crater in the landscape. The manufactured topsoil that was introduced lacked much biodiversity and nutrients at the beginning, therefore insects/bugs/worms etc were gradually introduced to promote the regeneration of wildlife.

*The gardens have three primary areas of interest:*

- **The Rainforest biome**

As the world's largest indoor rainforest, with an area of over 55000m<sup>2</sup>. It replicates the diverse ecosystems of tropical rainforests and showcases a number of animal and plant species, including spices, herbs, palms and fruit trees etc. The Rainforest Biome maintains a carefully controlled environment, simulating the conditions of Southeast Asian, West African, and South American rainforests.



Edens Rainforest Biome

- **The Mediterranean biome**

This Biome replicates the diverse ecosystems of Mediterranean climate regions, showcasing a range of plant species from summer dry areas to densely populated coastal areas. This building covers an area of over 4000m<sup>2</sup>, the biome's hexagonal geodesic design allows for optimal sunlight exposure, fostering an environment where olive trees, aromatic herbs, vibrant succulents, and other flora thrive.



Edens Mediterranean Biome

- **The surrounding gardens**

Surrounding the Biomes are extensive outdoor gardens that further display a wide variety of temperate plants and landscapes. These gardens are designed to represent different Geographical regions and horticultural interests, including a terraced hillsides full of plants from South Africa and California, as well as a small bog/pond area and a carnivorous exhibit.



Edens landscapes



Map of Eden 2023

## **5. Practical tasks at both sites:**

We spent two weeks at both sites working on this research project, with their teams to experience what it was like working at both locations.

*EDENS teams included:*

- Mediterranean biome
- Rainforest biome
- Estates/grounds/arb tree
- Gardens
- Plant Nursery

*SHHG teams included:*

- Jermyn's house
- Centenary border/pond garden
- Plant Nursery
- Grounds/arb tree
- Winter garden

General duties (for Aug and Sep) included:

Summer shrub pruning, planting annuals, dead heading, removing invasive plants from woodlands, watering, weeding, harvesting crops, putting out biological controls, crown lifting vegetables, dividing rhizomes, exhibit development, hedge cutting, chipping, leaf collecting, feeding birds, plant identification, general tidying up of beds, interacting with the public and many more tasks.



## Photos of practical tasks and working environment

### EDEN-



Edens Med Biome



Edens world foods



Edens Med Biome

### SHHG-



SHHG seating area



SHHG Acer Valley



SHHG Woodland

## 6. Site Data comparison:

General site specifications:	Eden	SHHG
Site size	230 acres (main 30 acres between biomes)	180 acres
Annual mulch produced	Roughly 100 tonnes	Roughly 105 tonnes
Horticultural staff	29	16
Volunteers	120	200
Opened to public	2001	1977
Created	Construction started 1998, September 2000 first planting started	1953 (privately owned)
Annual members	13,897	27,000
Plants recorded on databases	Roughly 7,394 (last updated 2020-2021)	Roughly 40,000
Annual visitors	1,000,000	250,000



## 7. Interview questions both for horticultural management and team

The scope of our project looked specifically at the horticultural teams' operations and not the entire site. We interviewed management and their corresponding team members, asking a variety of sustainability and ethical questions to understand how important sustainability is to both sites. We also engaged in general conversations with staff about our project to gain an insight into how important being environmentally friendly is to each individual.

For question (1) we have separated the answers for each site to showcase their unique horticultural practices, however we have combined the answers if both sites use the same practises. For questions (2-10) we have combined all the answers for a general overview of how large horticultural establishments can operate their day-to-day business with sustainability in mind.

*Formal interview questions:*

*1. What sustainable methods in everyday horticulture do you practise here?*

### **SHHG:**

- Potting mix recipe: Melcourt (forestry commission by-product), loam (waste product with basic trace elements), gravel and composted organic chicken pellets
- When buying mulch, using peat free Progro mulch which is made in England
- Using biological controls in the plant nursery (nematodes to control vine weevil and sciarid fly)
- Using a seaweed liquid fertiliser
- Planting a small number of annual plants for pollinators
- Using pigs for seasonal woodland management
- Working with organisations to rehome wildlife, i.e., hedgehog introduction
- Homing beehives, using less wasp killer and leaving wasp nests alone
- Trialling QR codes on signage to help reduce plastic waste

- Trailing ground cover plants for tree circles to avoid mowing, weeding and avoid water loss
- Eradicated pesticides and reduced herbicide usage by 50% over the last 20 years
- Building hibernaculum for wildlife
- Hedge laying mixed native hedging for habit creation and retaining traditional skills

**EDEN:**

- Aim to be chemical free, no pesticides or herbicides used
- Weed control trials: hot foam and pelargonic acid
- Electric vehicles including trailing an electric tractor, and front loader (with solar panels for electric)
- Geothermal plant, aiming to be carbon positive + by 2025
- Water capture used all over gardens with two water reservoirs (have never run out of water)
- Biodigester processes food waste and is added to compost
- Potting mix recipe: Melcourt (forestry commission by product), gravel and biochar (charcoal fertiliser)
- Using biological controls inside biomes and plant nursery to control pests (lacewings, parasitic wasps, predatory mites and beetles etc)
- Using cardboard tree guards that biodegrade
- Crops harvested in the gardens and plant nursery are used throughout restaurant
- Biomes positioned and designed to trap energy from the sun during the day and act like a heat sync, whereby it stores heat and releases it later on
- Washing plastic pots for sanitation and reuse

**BOTH SITES:**

- Encouraging wild meadows for wildlife by reducing mowing rotations
- No dig method
- Planting native trees and pollinator pockets
- Leaving log piles and making dead hedges, that slowly releases carbon and is good for wildlife
- Using recycled materials
- Using electric handheld power tools
- Producing mulch on site which gets used throughout gardens
- Using in-house resources and local suppliers as much as possible
- Adhering to IPM Integrated Pest Management

*2. Do you have any concerns regarding daily horticultural operations?*

- Carpet weeding
- E tools torque is not powerful in some circumstances
- Litter around site, not enough recycling points
- Plastic labels and signage, these break often
- Commercial events having an impact on wildlife especially at night
- Planting annuals
- Unnecessary single use plastic
- Unnecessary tractor use
- Spraying, using herbicides/pesticides
- Bonfires for waste disposal
- Organisation of yard materials, and not all of these items being reused
- Traditional attitudes/ways of thinking from staff members
- Health and safety of certain tasks for staff (weather oriented)

- Biomes are harder to create biodiversity within soil as it is artificial, and man made
- Constant public interaction (affecting productivity)

*3. What are your suggestions or solutions to being more environmentally friendly (ideally)?*

- Year-round animal woodland management
- Organic pest control methods (garlic sprays, pelargonium extract etc)
- Better plastic pot alternatives
- Water harvesting reservoir with UV treatment
- More use of natural predators to control insects
- Solar panels (to charge E tool batteries etc)
- Electronic tablets for recording plant information instead of paper
- Experimental vegetable beds instead of annual beds (which crop can be used for the restaurants)
- Reduce mowing by 75% less to help balance and retain water in soil
- Using biofuel
- Using a compost processor to make compost a finer grade
- Accommodation on site for staff, students and special visitors etc
- Creating own plant fertiliser from waste on site
- Bio-char creation and use (capturing C into soil)

*4. What are the main drawbacks stopping this location being more eco-friendly?*

- Funding
- Topography of land being difficult to work on
- Volunteer numbers
- Sourcing materials not locally

- Staffing levels
- Support from local council
- Staff acceptance towards new concepts
- Enabling staff education through management

*5. What materials do the gardens recycle?*

- Show exhibit materials get repurposed (Chelsea, Hampton Court etc)
- Wood: green waste turned into wood chip, coppiced hazel and chestnut for weaving, bamboo canes for stakes
- Plant material used for Christmas wreaths etc
- Plastic pots get washed and reused
- Gardening essentials (tools, nettings, reusable cable ties, tree stakes, tree ties, etc)
- Yard materials (aggregate etc)
- Recycling no mix bags (pesticides)
- Recycling bins throughout site
- Biodigester turns food waste into compost matter
- Cardboard used as a weed suppressant

*6. How do you promote regenerative gardening?*

- Raise public awareness about encouraging soil biodiversity
- Reduce damage to soil structure by not trampling on wetland/bed after heavy rain
- Mulching for weed suppression and enriching ground
- Creating more perennial meadows over annual meadows
- Targeted woodland clear ups to encourage regeneration
- Targeted watering on newly planted shrubs and trees



- Applying no-dig regime, weeds are controlled by shallow hoeing and hand weeding
- Not disturbing soil fauna
- Use crop rotations
- Targeted grass cutting
- Planting more ground cover for weed suppression management

*7. Do you have any kind of sustainable strategy long term?*

- Get a good crowdfunding/investing source to achieve renewable energy
- Climate positive within 6 years (by 2030)
- Advertising an ethos of being as self-sufficient as possible
- Encouraging staffs and public to garden more sustainably at home
- Follow local council and government strategy to reduce carbon footprint

*8. Are there any obstacles or challenges to implementing energy-saving practices that you have observed?*

- Time
- Money
- Technology
- Staffing

*9. Is there a climate change strategy in place?*

- Storing as much rainwater as possible to make irrigation systems self-sufficient
- Ensuring flash flooding systems are in place by using pumps
- Ensuring storm procedures are in place (gardens closed when wind is over certain speed)

- Checking Forest Research climate modelling tool
- Look at past climates, present climates and predict the future climate
- Gardens interchange seed samples (for plants that can cope with climate change)
- Trialling planting warmer climate species of trees/shrubs for the future

*10. How do you think you can encourage the public to be more sustainable at Home?*

- Display easy-to-replicate at home products (pollinator pockets/bug hotel/dead hedges/nest boxes)
- Raise awareness of the impacts of increasing global temperatures
- Educate public on the power of their choices/spending (ethically sources, climate positive products etc.)
- Publicising and advertising plant societies that encourage sustainability
- Exchange ideas between different gardens about greener horticultural practises
- Stop displaying annual plants and stop selling annual plants (explain that growing perennial plants is better for environment)
- Promote recycling, green energy use, grey water use etc.
- Education (social media tutorials, video exhibits showing what happens behind the scenes at the plant nurseries, practical workshops, talks and lectures, knowledge-expanding interpretation boards QR codes)
- 'Jobs of the week' boards in Gardens, advertising what the horticulturalists are up to this week

## 8. Interview conclusions/suggestions

In the context of educational and conservational gardens, sustainability is a broad subject. As modern society evolves and progresses, the less damaging/destructive traditional approaches of forestry/agriculture/horticulture etc are becoming disregarded as the need for a high turnover and a faster way of creating money is in full demand.

Based on the interview answers and general conversations between staff members during our time at both sites, we have concluded what we think are the most important suggestions any kind of horticultural establishment can invest in to reduce their carbon footprint.

While some of these suggestions are restricted to staff, resources and funding, our smaller suggestions involve less man hours/money/time and rely more on the more traditional and innovative methods of gardening.

### ***THESE KEY AREAS/POINTS INCLUDE:***

#### ➤ **Food waste biodigester:**

Within hospitality services at public gardens, unnecessary food waste is a major issue. Processing food waste on site and turning it into an organic nutrient dense fertiliser can be added amongst regular compost to benefit the mulch. This will reduce overall rubbish waste collection from the site.

#### ➤ **Annual animal management:**

Over time, large woodlands can become overgrown if not maintained frequently. Collaboration with farmers can allow for animals such as pigs to be trialled on a small scale to help target herbaceous weedy areas of woodlands/forests (If public security could be enforced).



SHHG woodland pigs

#### ➤ **Climate friendly (carboard) tree guards:**

On young trees, in winter when food is scarce, to protect trees from being damaged by deer's and/or monk jacks, tree guards are used to mitigate this. Cardboard tree guards can reduce plastic and over time these biodegrade which means less check-ups are needed on certain species of trees.

➤ **Organic fertilisers:**

Producing organic fertiliser on site for example, *Symphytum officinale* (Comfrey) leaves soaked in water is a great alternative to buying in liquid fertiliser. Secondly, treating and sanitising herbivore waste on site into either compost (i.e., pig waste or horse manure) is another nutrient dense enricher.



*Symphytum officinale* at Eden

➤ **Volunteer numbers:**

Volunteers across different sectors, can help site productivity enormously. To attract more volunteers, offering benefits such as memberships, discounts and entry to other gardens can be effective. A more personal benefit could include volunteer workshops on horticultural theory and practical to help aid their knowledge.

➤ **Dead hedges, log piles and hibernaculums:**

Encouraging biodiversity is of utmost importance whilst working alongside nature. Providing habitats and shelter for a variety of wildlife to hide, nest, or find protection from predators is crucial for this encouragement. Resources used for building these animal refuges can be recycled from daily yard materials, (woods, stones, flowerpots etc.) which is another way to enhance sustainability.



Dead hedge at SHHG

➤ **Rainwater harvesting:**

Ongoing climate change is an inevitable factor that public gardens have to face. With more consistent droughts over summer, investing into a water capturing system (i.e., bore hole) can take the pressure of relying on mains water and make irrigation systems self-sufficient.



Edens rainwater butt

➤ **Plant nursery video display:**

Replenishment of plants is paramount throughout beds on sites as naturally some plants die over time due to climate change etc. If sites have a plant nursery, showcasing what goes on here through videos (shown at information/visitor centres) can encourage sustainable propagation, conservation at home.



Edens plant nursery

➤ **Repeated public interaction:**

Certain jobs can sometimes be slowed down due to how much interest they gain from the public alongside public interaction. Each day or week, writing up a brief explanation of what task is being carried out could avoid this (for example, planting spring bulbs). This could boost staff productivity.

➤ **Renewable energy:**

Usually, the biggest expenditure for public gardens is electricity. Renewable energy sources such as solar, wind or geothermal can reduce dependence on fossil fuels, thereby lowering carbon emissions. Reducing dependence on traditional power grids and improving energy independence, renewable energy systems can ensure the operation of equipment, especially in remote areas or during power outages.



Edens Geothermal plant

➤ **Repurposed yard materials:**

Over the years it is inevitable for sites to collect and store old materials. New projects could be produced based on the yard items available (for example, using old tractor trailers and turning these into raised beds). By recycling as much of these materials as possible on site, it can effectively reduce landfill disposal.

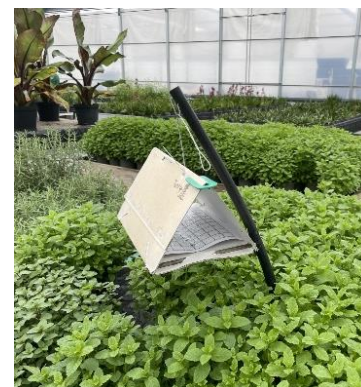


Edens pot washing



➤ **Bio controls in glass houses/poly tunnels etc:**

Specific plants attract specific pests, managing these effectively can be a huge challenge. Using bio controls such as nematodes to target the unwanted pests, can reduce the dependence on pesticides, reduce the negative impact on probiotics, and protect beneficial microorganisms and insects in soil, water and other ecosystems.



Edens bio controls

➤ **Mulch:**

All gardens generate an enormous amount of green waste annually. To produce fine mulch that is nutrient dense the following steps have to be secured to ensure microbial activity. By using large bays for storage, turning herbaceous green waste weekly (with a tractor) can ensure that the temperature threshold is reached (32-60.c degrees). Afterwards, mixing in treated/dried chipped wood is great for drainage and microbial development, alongside organic fertilisers which can provide much needed nutritional benefits.



SHHG mulch bay

➤ **Interpretation boards:**

Signage boards seem to take a long time to get manufactured and delivered. Using a scribe/illustrator/keen artist could temporarily make an interpretation board using a chalkboard could allow time for the actual boards to be made and also to test out any ideas/interpretations before committing to manufacturing signage.



SHHG example of written signage

➤ **Electric tools and vehicles:**

Whilst most gardens are very large, getting around promptly can be a challenge without some assistance therefore looking at electric vehicles and even tractors can make a dramatic difference to the carbon footprint of a site. Compared with traditional gasoline tools, electric tools are ultimately inexpensive to run, can reduce air pollution, noise pollution, and reduce carbon emissions.

➤ **Less mowing, more wildflower areas:**

Traditionally, for public areas it has been thought that larger areas of grassland need to be maintained through grass cutting often. Reducing frequent mowing and encouraging long grass areas, can provide a place for pollinators, improve soil structure, improve soil fertility and water retention capacity. Adding mown paths will help the public to still access the area and make them interact more closely with the 'meadow feeling'. *Rhianthus minor* (Yellow rattle) and *Leucanthemum vulgare* (oxeye daisy) are two great examples of wildflowers that can support biodiversity.



SHHG Summer meadow

➤ **Planting for climate change:**

Planting native species of trees is essential in the preservation and conservation of our forests and woodlands. Trialling planting trees for climate change is now becoming more crucial in the predictions of our planet's continuous temperature rise. Seed sample exchange (of plants that can cope with climate change) between botanical gardens is a more local way of relying on our own English sources rather than importing established plants from other countries.



SHHG predator pocket sign

➤ **Staff education-**

It was an interesting find to discover that the age of the interviewee had a real impact on their attitudes towards sustainability and its importance. Therefore, education is key for staff to be onboard with new ways of thinking. Frequent meetings, presentations, handouts and workshops ran by management can be offered to staff members explaining what the company's values are regarding environmental sustainability and why it's important to share these beliefs with the general public.

## 9. Personal reflection

Holding strong environmental values is paramount in securing our deep relationship with the flora and fauna that the natural world has to offer.

After undertaking this research project, my understanding of what sustainability means has deepened. In essence, it means to continue what one is doing indefinitely and to maintain this at a certain rate. In environmental terms, this means to avoid the depletion of natural resources to maintain an ecological balance. I believe this should be at the very forefront of any horticultural companies' goals and above all else, should be an ethos which they stand by.

As a horticulturalist and plant enthusiast, there is a very bittersweet line between feeling passionate about nature, plants and wildlife and definitively going against this whilst gardening through traditional and stagnant ways of thinking. Everything from using fossil fuels for vehicles/tools that contribute to carbon emissions, to using single-use plastic that will never decompose, to planting a shrub/tree incorrectly and knowing its true lifeline, are all everyday regular occurrences within the industry. These are just a few of the poor modern-day practices and mindsets that are to the detriment of the environment and its habitats.

I hope this report has shed some light on what goes on behind the scenes for large public gardens. Whether a big idea or a small one, by sharing these findings I hope this can encourage collaborative learning between horticultural establishments.

Everything about this journey has been out of my comfort zone and within an area of horticulture with which I am unfamiliar. Not only have I become more self-assured, it has given me a greater sense of purpose as to why I am a horticulturalist. I am eager to continue making positive differences within the industry and I am excited for where this project can take me professionally.

As Sir Robert Baden-Powell, the founder of the Boy Scouts, told his scouts to "try to leave this world a little better than you found it."

Thank you for taking the time to read our report,  
Ella and Haowen



## 10. Acknowledgments:

- The Merlin Trust (who kindly funded our entire trip and made it all possible, we are very grateful)
- The Sir Harold Hillier Gardens, (special thanks to our Botanist and student-coordinator for inspiring us and encouraging our research project, our Head Gardener for helping use finalise our report and the whole Hillier team for being supportive of our trip)
- The Eden Project, (special thanks to the Head of Horticulture and the Living Landscapes Outer Esates Manager for giving us the opportunity to work at such an inspiring botanical Garden and the team for being very welcoming)
- Every interviewee who took part in our project and gave positive sustainable solutions
- Anyone involved in the logistics of making this trip possible

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## 12. Finances

Bursary money received From Merlin Trust: £396.00 per person

(Used for travelling and staying at the Eden project for two weeks only, as we had already worked at SHHG as students)

Haowen contributed her car for our journey; therefore, we saved the cost of car rental/train tickets. We also saved some money by sharing the cost of our food.

12th Sept 2023-24th Sept 2023	Expenditure	Cost
	Food and groceries (including eating out)	£176.60
	Accommodation (Hostel at Eden Yard Backpackers)	£185.00
	Fuel	£34.90
	Personal contribution	£100
	Total cost	£496.50