

# Product Guide

- Living Wall
- Living Roof

ans exterior

# Welcome

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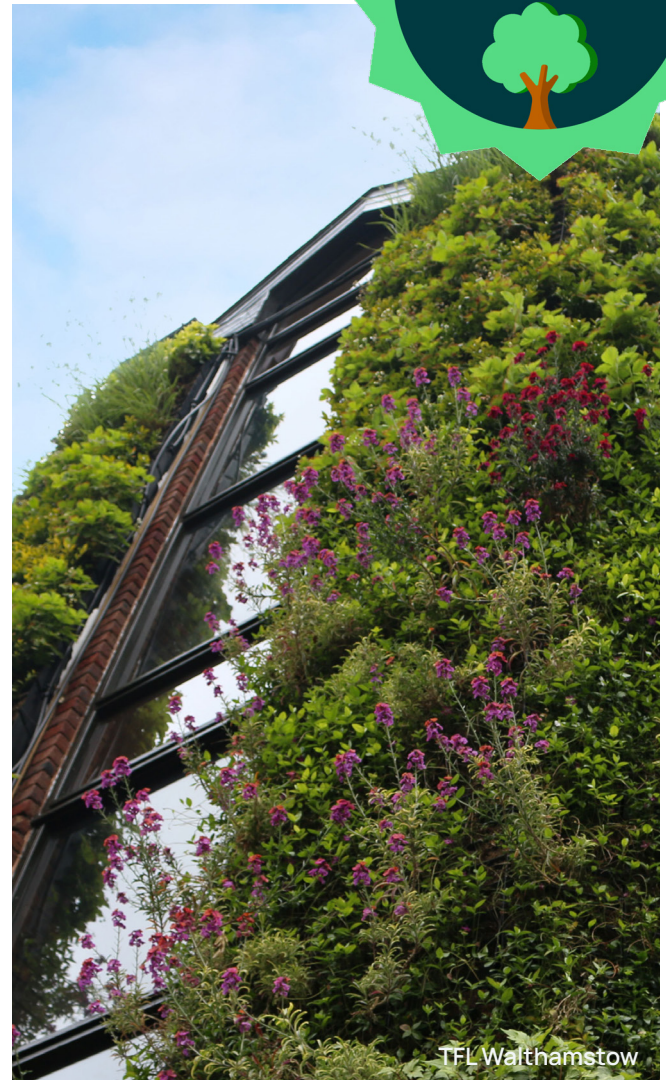
## Leaving a legacy of biophilic and biodiverse spaces.

We realise buildings that actively improve urban biodiversity and air quality, and solve environmental regulatory challenges such as Biodiversity Net Gain (BNG) and Urban Greening Factor (UGF).

Where space is at a premium, soil-based living walls and biodiverse green roofs are the perfect solutions to provide valuable ecological benefits and create long-term environmental assets, without taking up valuable space.

We hope we inspire you to enhance structures naturally.

Richard Silcock  
Managing Director



TFL Walthamstow

# The ANS Living Wall System

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## What do we do differently?

**Building on the right foundation.** There is one key element that is essential for the success of all the GI habitats for biodiversity and wider ecosystem services: soil. This one but hugely important factor allows for multiple added benefits, including:

- Solitary bees
- Water storage/buffer
- Fungal biodiversity
- Resilience against adverse conditions

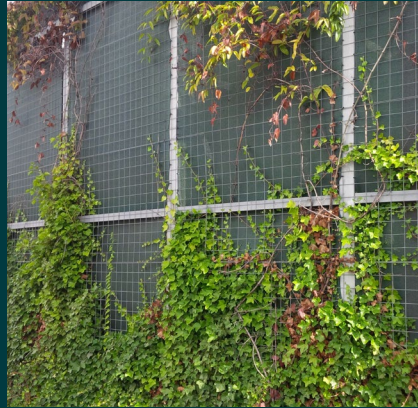
Plants are growing in their natural habitat. This means greater resilience and a **long-term solution.**



# The ANS Living Wall System

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What's the difference between natural soil, hydroponic and wire systems?



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## Hydroponic

Uses a man-made substrate (such as rock-wool or insulation) for the plants to take root in. As there is no soil to retain moisture, it requires an almost constant irrigation supply containing chemical based nutrients feed the plants. As the plants are not growing in their natural habitat, plant design choice is limited.

The plants root hairs have insufficient protection and should the irrigation fail even for just two days, the entire wall is susceptible to drying out with devastating effect (pictured above).

ANS do not install hydroponic systems. While they can work in some applications the risk of failure is too great.

# The ANS Living Wall System

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What's the difference between natural soil, hydroponic and wire systems?



## Wire / Climber System

This living wall system comprises of stainless steel wires which trailing plants grow up. This method provides a cost effective solution for large areas with the added benefit of low annual maintenance. The plants will however take a number of years to establish and are never likely to achieve full coverage. The planting is restricted to trailing plants only and it is impossible to create shapes, patterns or wording in the wall.

ANS Global can install wire systems where required, however it is not a true alternative to the ANS Living Wall system.

# The ANS Living Wall System

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What's the difference between natural soil, hydroponic and wire systems?



## Natural Soil

This living wall system uses a natural soil based media as the plant substrate. The plants are therefore growing in their natural environment which allows for healthy natural growth, and greater flexibility with planting design to fulfil the purpose (eg. biodiversity). The system allows for a huge range of plant species and the planting facilitates creativity with shapes, patterns and words. The living wall can be installed fully established giving instant impact.

Natural soil is a long-term stable environment for the plants that retains water efficiently and provides greater biodiverse benefits. Even if the irrigation should fail, the plants root hairs are protected by the contracting soil, guaranteeing longevity.

# The Process

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1

Consultation

2

Design

3

Production

4

Installation

5

Maintenance

# Consultation

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## What's your purpose?

### Improving Local Biodiversity

Using natural soil affords us the chance to be creative with the plant palette, allowing specific selection of species with biodiverse properties.

We've worked on a wide range of projects where we've helped successfully achieve targets such as Biodiversity Net Gain.



### Achieving Planning

Restoring some of the nature lost to the construction works and meeting local targets often helps to achieve planning permission.

As on the project below, we worked closely with the architect to ensure the MSCP received planning permission.



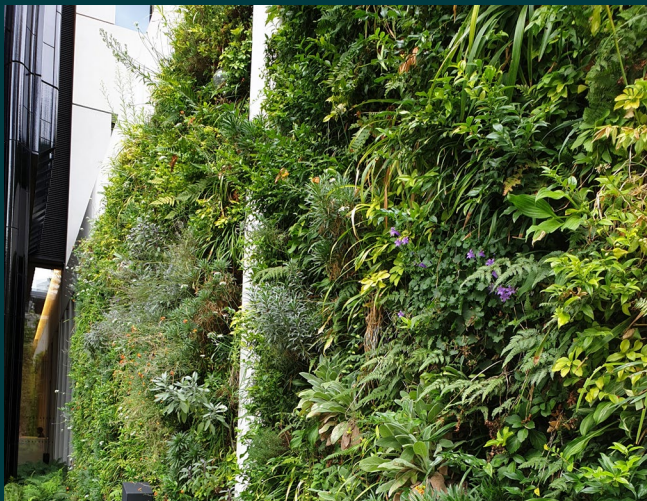


# Consultation

## Improving Air Quality

Soil is able to capture and filter particulate matter, and plants are naturally equipped with the ability to filter, absorb and trap particulate matter.

Some species have better air purification properties than others, and using soil as the foundation allows us to be specific when selecting the most effective species.



## Biophilia + Well-being

Understanding the aim of a living wall is to promote well-being, our design team are able to propose concepts that take advantage of the biophilic properties of natural design.

Patterns, colours and textures can be used to mimic a particular scene or feeling.



# Consultation

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Opportunities for further sustainability and efficiencies (eg. rainwater harvesting)

Understanding of key project drivers

**Consultation Stage**

Analysis of on-site potential

Understanding of client's vision

## Design: Plant Selection

Plant selection is critical to the long-term success of a living wall. Our in-house horticulturists have crafted comprehensive plant lists based on a range of locations, aspects and design considerations. These are kept up to date with climate changes to ensure each project is a long-term success.

As well as climate, elevation and aspect, the desired aesthetic and project drivers are also key factors that affect the plant selection. For example, we create plant palettes:

- To improve biodiversity
- For air purification
- Provide seasonal interest with bulbs and flowering plants
- Meet specific regulations such as BNG



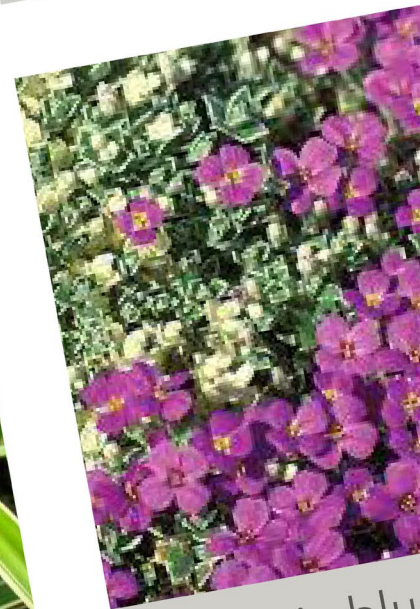
Adiantum pedatum



Alyssum spinosum




Carex morrowii



Aubretia blue

## Design: Plant Selection

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A challenge on a smaller scale: create a continuous tapestry of plants between the kitchen and the garden, using interior and exterior plant palettes.

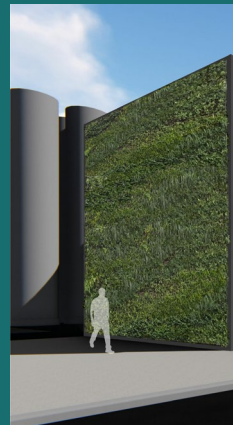
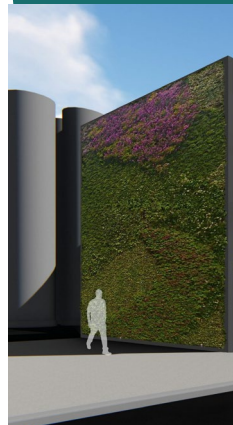
# Design: Concept Design



Our design team can produce full colour mock-up and design concepts either for a decided location, or to highlight the potential for living walls on multiple locations on-site.

These designs are helpful to show the benefits of different planting designs using the chosen plant palette, playing with colour, pattern, texture and 3D effects.

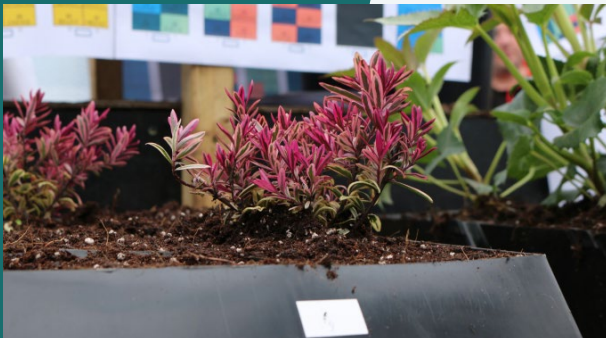
For this project, the final choice was a simple design using only three plant varieties, for a minimalist but textured finish.



# Production



Each plant chosen for the wall is numbered according to its position within the module as well as the main wall. The modules are hand planted in accordance with the design's numbering.



Our dedicated nursery team have years of horticultural experience, so the plants are carefully maintained and tended to throughout the establishment period.

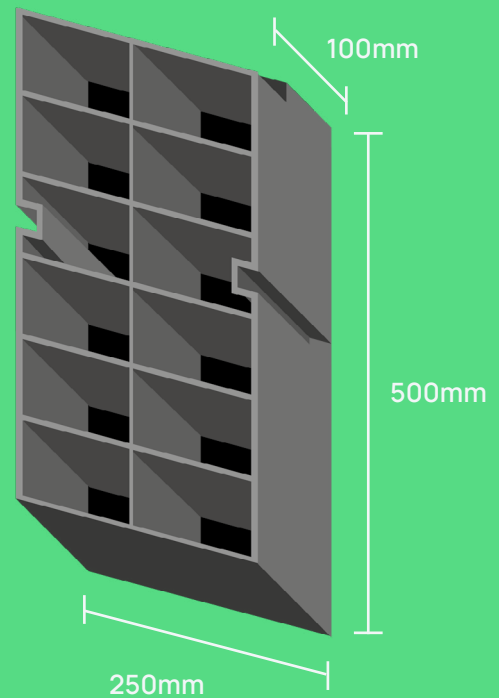
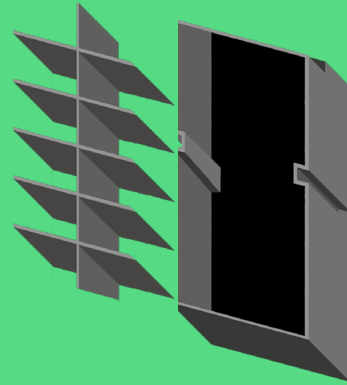


We normally allow for a minimum establishment time of 3-4 weeks for internal living walls and 6-8 weeks for external, although this is dependant on the plant species used in the wall.

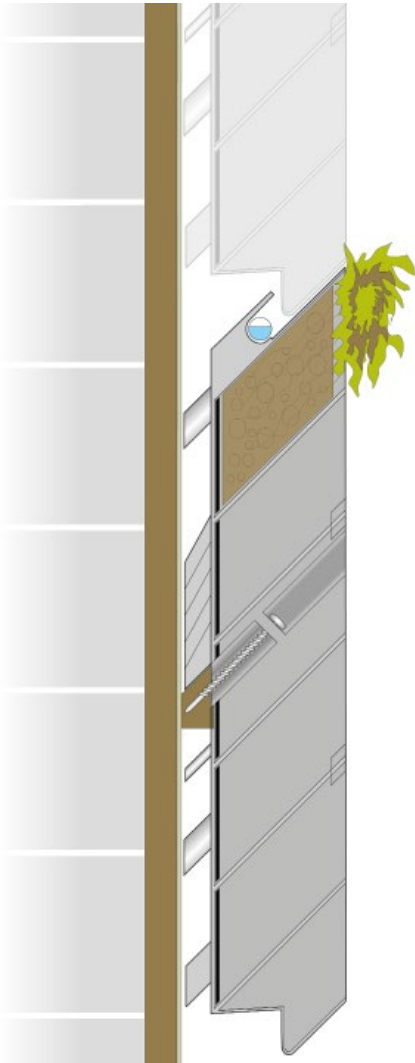
Once the wall is planted, the client is welcome to visit the nursery to inspect their wall and make any finer adjustments they feel are necessary to ensure the product's design and growth is to their satisfaction.

# The ANS Living Wall Module

- Manufactured in the UK from 100% recycled material
- Wind resistant to 140mph
- Modules are planted and plants are acclimatised prior to installation
- 72kg per m<sup>2</sup> fully saturated
- In extreme weather the module is designed to expand externally
- 8 modules per m<sup>2</sup>
- No visual exposure of the module on the frontage
- 96 plants per m<sup>2</sup>
- Central section is separate to allow for deeper root movement in the module. This allows for larger plant species to develop.



# The ANS Living Wall Module





# Fire Regulations

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The ANS Living Wall System has achieved the top fire rating to BS EN 13501-1:2018:

**Class B-s2-d0**

**This is the highest possible fire rating for a living wall system.**

Let's break down this rating.

Class A = non-combustible

**Class B = limited combustibility**

Class C = medium combustibility

s1 = little or no smoke

**s2 = quite a lot of smoke**

s3 = substantial smoke

**d0 = none**

d1 = some

d2 = quite a lot

(flaming droplets and particles)

Having zero droplets is key as it means limited or no surface spread of flame.

# Fire Regulations

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## What does this rating mean?

You can design and integrate living walls into nearly all buildings apart from:

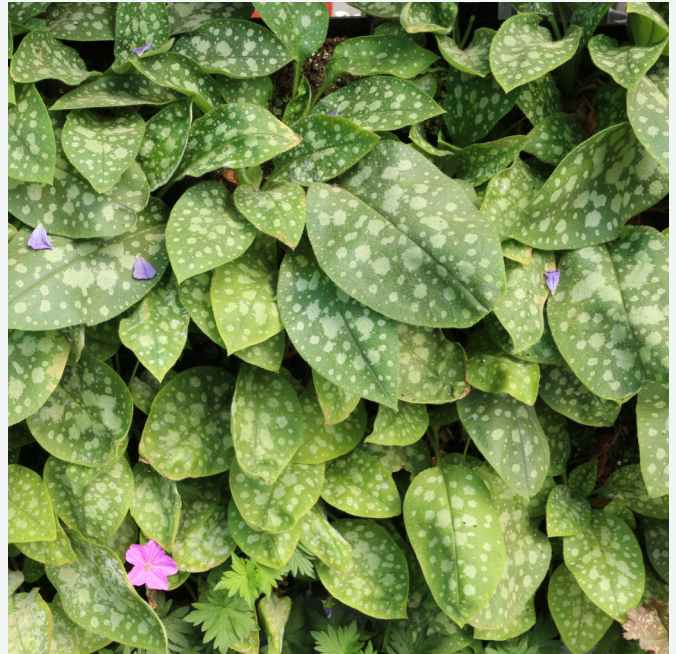
- Residential buildings over 11m in height

To learn more about where you can and can't design living walls and design amendments to improve fire safety, we recommend joining one of our 15 minute online learning sessions on this topic. Upcoming sessions are listed on our website [here](#).

**It's impossible for any natural living wall system to achieve Class A.**

Plants will always be combustible, no matter which types are used and how moist they are kept.

**Be aware of natural systems that claim to be Class A.** This is often the fire rating of the build-up and/or module, not the full system!



# Installation

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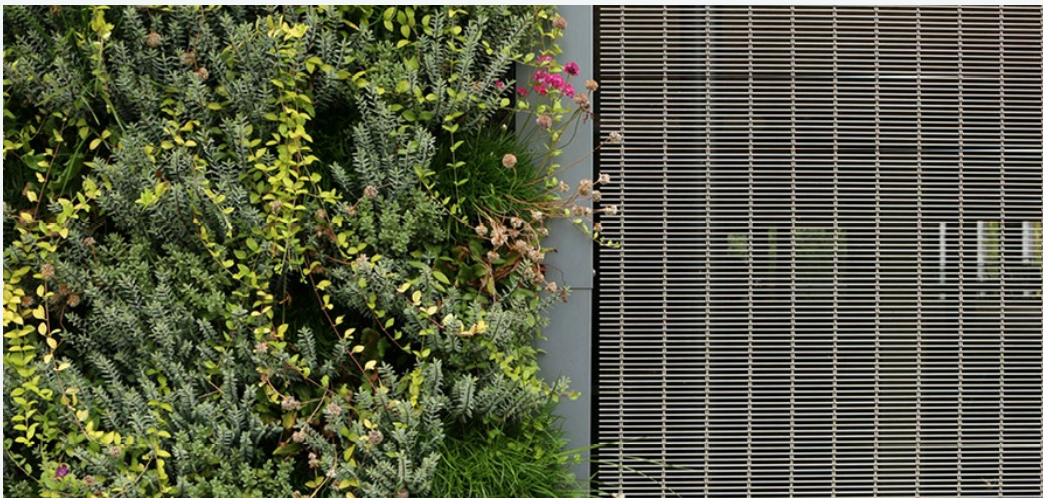
We use multiple build-up systems which enables us to work with most structures and surfaces.

This includes:

- Steel frame
- Brick
- Concrete

Designing and selecting a living wall system early on in the scheme allows for configuration of the right build-up system into the building structure (see image of Granta Park MSCP).

This not only reduces costs from doubling up on facade materials, but also gives the advantage of the opportunity to incorporate sustainable rain-screen cladding with added biodiverse benefits.



## Helpful Tip

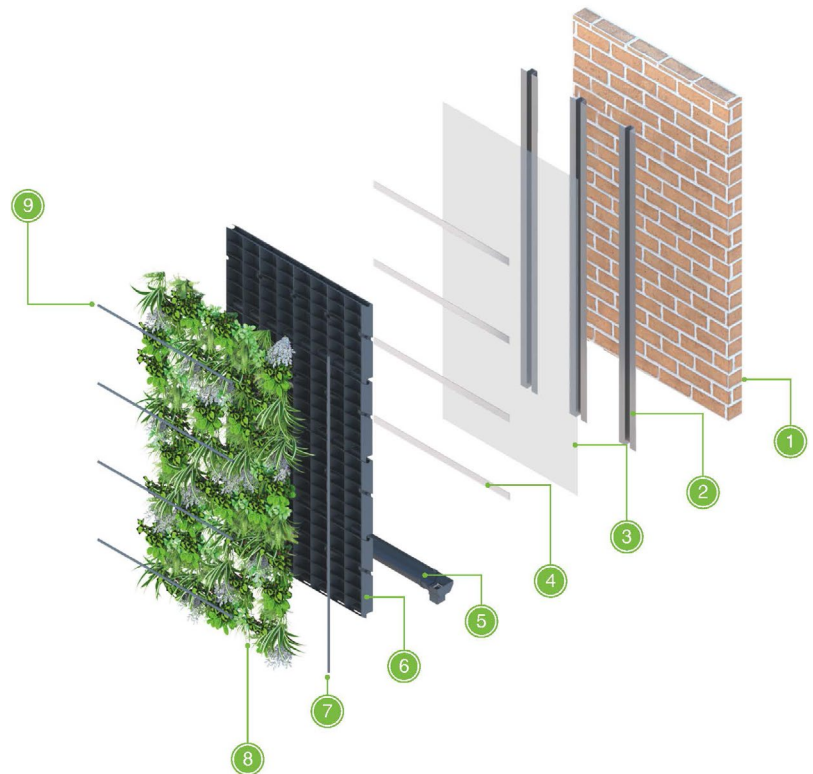
Ensure build-up and installation is considered early on in the scheme (early design stages). This can cause substantial cost savings.

# Installation

## Aluminium Tophat Build-up System (Standard)

This build-up can be used to retrofit a living wall onto new brick work and masonry facade. This option is suitable for any application where there is a solid brick or concrete surface to fix back to.

1. Indicative brick or concrete surface
2. Vertical Omega carrier rail
3. Waterproof membrane
4. 48x12mm ANS Fixing Rail
5. Osma Squareline Gutter or client specified
6. ANS Living Wall Module 500x250x100mm
7. 16mm vertical irrigation pipe
8. Planting
9. 16mm inline emitter pressure regulated irrigation pipe

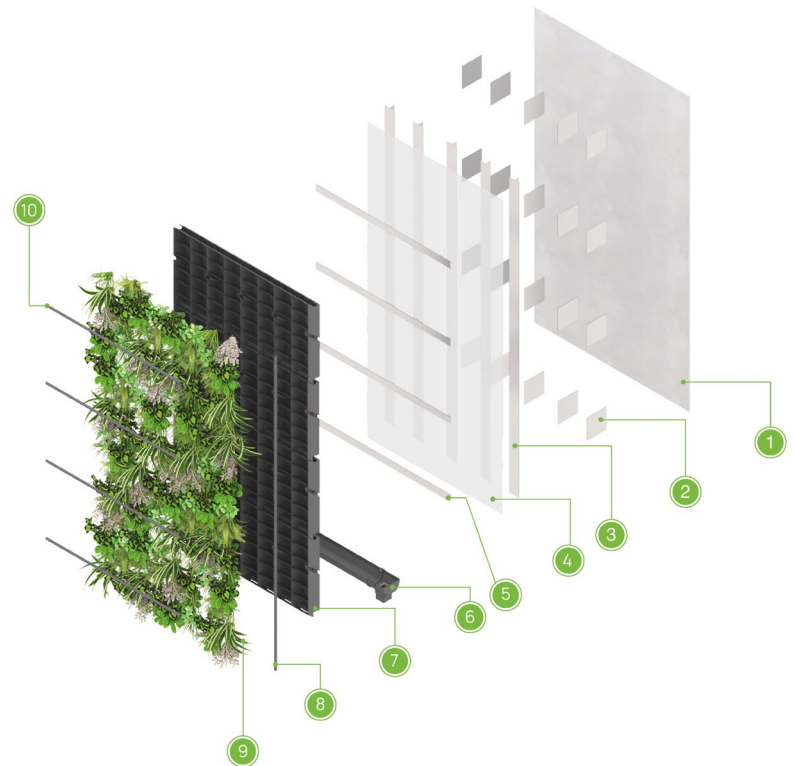


# Installation

## Helping Hand Build-up System

This build-up is suitable for a living wall that is to be applied as a cladding system onto a steel structure.

1. Indicative steel structure or cladding
2. Helping hand 'L' bracket
3. Vertical 'T' Rail
4. Waterproof membrane
5. 48x12mm ANS Fixing Rail
6. Osma Squareline Gutter or client specified
7. ANS Living Wall Module 500x250x100mm
8. 16mm vertical irrigation pipe
9. Planting
10. 16mm inline emitter pressure regulated irrigation pipe



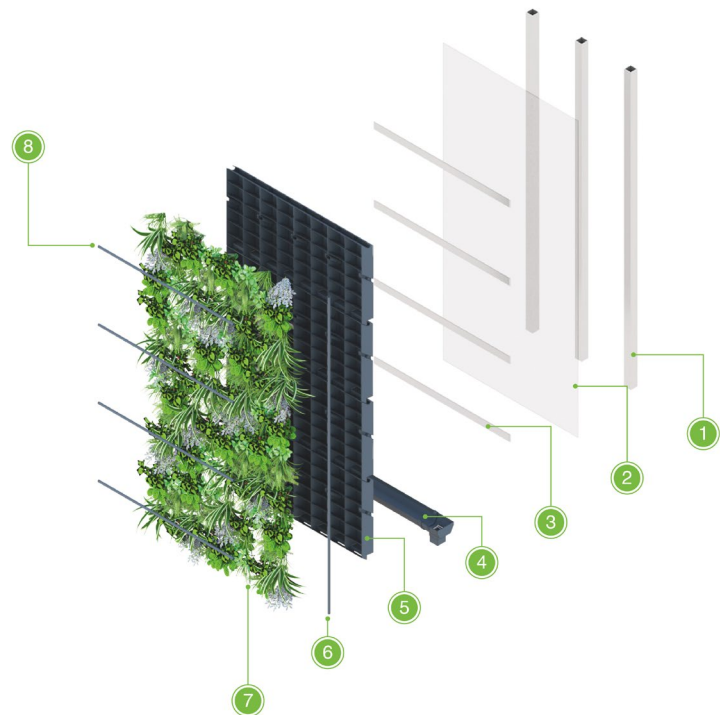
# Installation

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## Steel Frame Build-up System

A purpose-built steel frame can be used to serve as a biodiverse sound barrier or site divider, such as at [The NEC, Birmingham](#).

1. Existing steel frame - maximum 600mm horizontal centres
2. Waterproof membrane
3. 48x12mm ANS Fixing Rail
4. Osma Squareline Gutter or client specified
5. ANS Living Wall Module 500x250x100mm
6. 16mm vertical irrigation pipe
7. Planting
8. 16mm inline emitter pressure regulated irrigation pipe



## Irrigation

The irrigation pipes are hidden from view but fulfil a critical role. The supply of water to the wall is essential to healthy plant development. The back of each living wall module is kept moist facilitating the natural composting of mature roots.

For living walls under 30m<sup>2</sup>, we'll use an irrigation system without a tank, and for any living wall over 30m<sup>2</sup> there'll be a tank.

Using natural soil means we can keep the water usage to a minimum, as soil efficiently retains moisture - more than a man-made material can.

Every ANS Living Wall includes a built in irrigation system.

## Rainwater Harvesting

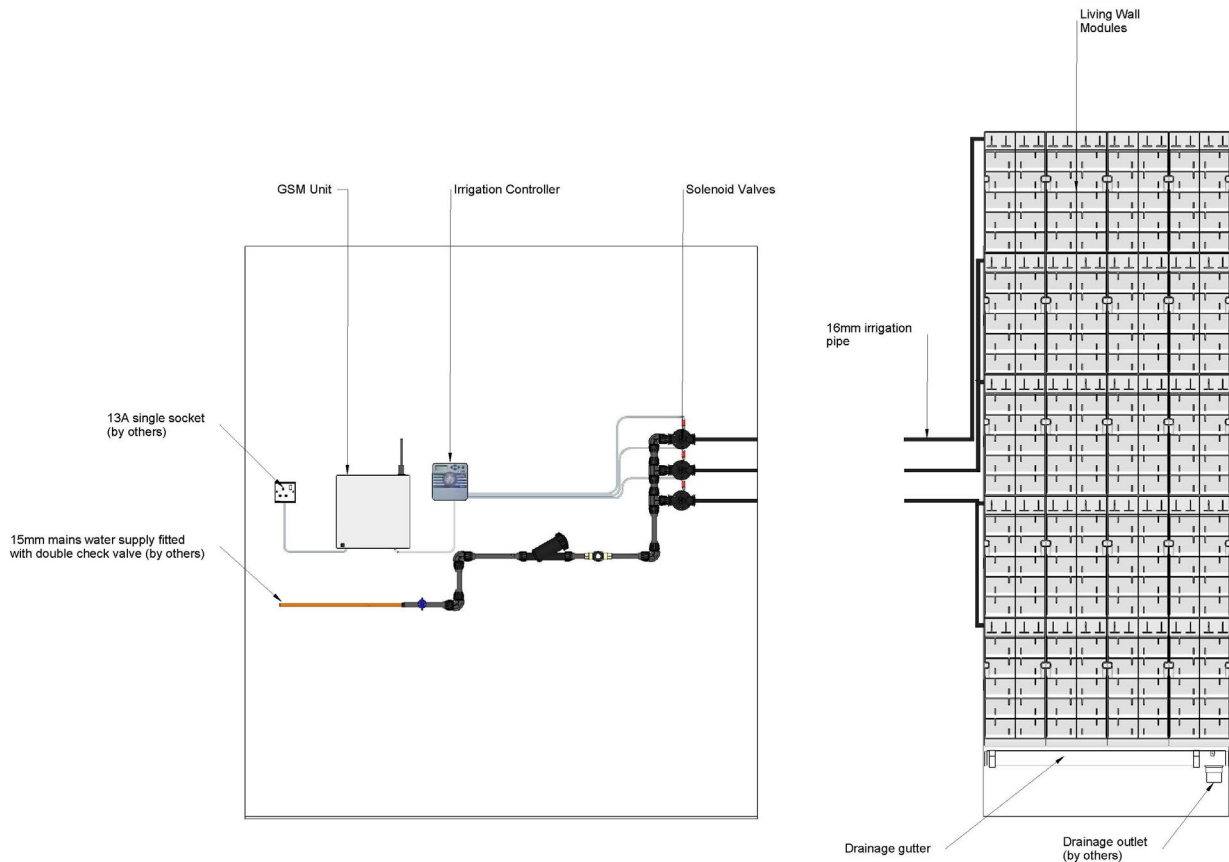
Harvested rainwater from the building roof can be used for the wall.

We can work with you in the early stages to design in and integrate a rainwater harvesting system.

This is where we collect rainwater and use it to irrigate the living wall where possible. This not only increases the sustainability of the scheme by reducing mains water usage, but is effectively an alternative approach to SuDS (Sustainable Drainage Systems).

# Irrigation no tank

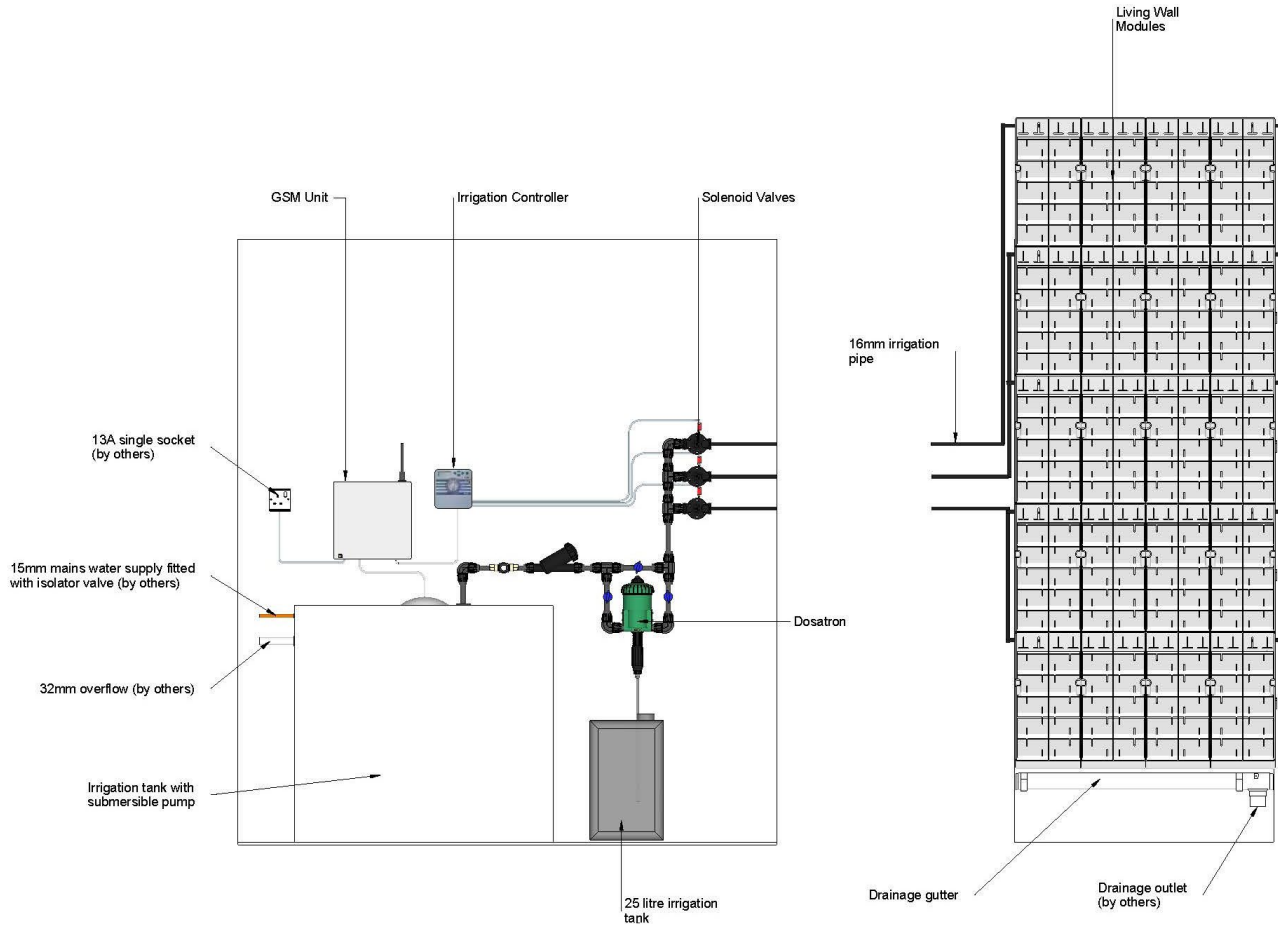
## Irrigation layout for living walls under 30m<sup>2</sup>





# Irrigation with tank

## Irrigation layout for living walls over 30m<sup>2</sup>



## Lighting

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Lighting is an important consideration when designing a living wall. As in natural environments, different plant species thrive in various light levels.

# Lighting

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Top  
Fitbit

Right  
MOYO Hair

We can select plants to accommodate the aspect and natural light intensity of each project.

In areas where no natural light is present (particularly indoors) it is essential to artificially create the right light intensity and colour temperature to support healthy plant growth. Light intensity is measured in foot candles (FC) or lumen's.

For reference a clear summer day is around 15000 FC. We require a minimum of 250 FC for a long lasting living wall. Light colour temperature is measured in Kelvin (K). Natural sunlight provides a full spectrum of colour and indoor living walls will thrive with a similar light balance (4500 K to 6000 K). For a healthy living wall we require a minimum of 3000 K.

If you are unsure whether you will need extra lighting for your living wall, give us a call on +44 1243 545818 and we can discuss.

# Drainage

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Drainage is needed to cater for the minimal run-off at the bottom of the living wall.

As standard practise we will install a 107mm x 51mm black plastic gutter. However there is no limit to your creativity in specifying different drainage channels, as per the following examples:



Top Right  
XL Catlins

Top Left  
University of Leicester

Bottom  
Trafalgar Place



# Maintenance



Maintenance and forward planning are key for product longevity and to ensure your living wall remains an environmental asset.

This will require regular visits to ensure the computer controlled irrigation system is distributing the correct amount of water throughout the wall. We recommend that this visit is monthly. At the same time, there will be a visual inspection to the plants checking for any early signs of pest and disease. Should there be any concerns, our technicians will apply a biological treatment which is safe for the environment through the irrigation system. Plant growth will be monitored and any localised trimming or pruning will be carried out.

These monthly visits ensure the walls are kept healthy and continue to flourish.

# Maintenance

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The Mailbox

## Helpful Tip

The maintenance costs should be calculated at the design stage to become part of the management costs of the building and reflected in the service charge within the cost consultants' reports.

Twice a year a full plant husbandry visit will be arranged. This will require full access to whole of the wall. The plants will be pruned back in accordance with standard horticultural practice and any aged plants or failed plants can simply be replaced in their module (this is all covered in our maintenance contract).

Once the wall has had its overall prune, we then apply an organic phosphate/potassium feed through the dosatron to encourage root development over the coming year.

Details of maintenance should be included within the specifications, O&M manuals, and on-going management plans for the building.

# The Benefits of Living Walls

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We'll go into a bit more detail on the power of natural living walls, focusing on the following key advantages:

- Air Quality
- Biodiversity
- Planning and Regulation
- Temperature Regulation
- Protective Cladding
- Acoustics
- Property Value

## Air Quality

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Did you know that more than 300 cities in UK are over the WHO recommended limit of 10 mcg per cubic metre (PM2.5)?

Green infrastructure filters out up to **95% of the pollutants** generated by vehicles and industry and living walls are a powerful method to aiding air purification, covering a large expanse of otherwise wasted façade, and unlike traditional landscaping, without taking up precious space.

### How does this happen?

Plants clean the air through the process of photosynthesis: absorbing carbon dioxide and producing oxygen, whilst soil assists in capture of particulate matter. Using soil also gives us flexibility with plant selection which allows us maximum opportunity to select species that hold air purification properties.

#### Fact

1m<sup>2</sup> of plant cover traps 130 grams of dust per year, and generates the oxygen required by a person throughout the year. Now imagine how effective hundreds of square metres on just one otherwise wasted façade would be?



# Biodiversity


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Biodiversity is hugely important to our quality of life, and this is especially pertinent in our urban spaces, where nature (and therefore biodiversity) is often constructed out.

Our system allows us to incorporate a diverse range of plant species that support the local ecology. Design can be tailored specifically to meet the project objectives and we can bring significant biodiverse value with specific plant species, including spring bulbs, native species and pollinator planting to create habitats for bees and encourage natural colonisation.

**Natural substrate is the foundation from which we design for biodiversity.** Without soil, we couldn't provide for biodiversity as much as we do on our living wall projects.

See the birds making themselves at home at [this development](#).



Living walls  
at National Grid  
Car Park

## Planning & Regulation

Solve regulatory challenges and planning conditions by designing the wall to hit the environmental targets.

We've worked on several projects where the living wall has been specified to help the scheme meet specific standards, such as:

- Biodiversity Net Gain (BNG)
- Urban Greening Factor (UGF)
- Circular Economy
- BREEAM

Pictured: Living balustrade at London Wall Place



# Biodiversity Net Gain

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**Soil-based** living walls are hugely beneficial in helping projects hit the 10% BNG targets. We can design the plant palette to provide for biodiversity (either as the sole purpose of the living wall with 100% of the species providing significant biodiverse value, or a compromise). We can also integrate a rainwater harvesting system with the living wall for extra sustainability.

# Urban Greening Factor

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Incorporating a living wall can help you meet your local Urban Greening Factor target (they differ depending on project and location), as it increases the level of greening on your project.

The added benefit here is unlike a pond or wetland, a living wall does not take up space that could otherwise be developed, which means local targets can be hit **without compromising on ROI** of the build.

Pictured: The highwalk at London Wall



# Circular Economy

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A living wall is an effective way to **over-clad an existing building rather than demolishing**. Our modules are also made of recycled material and are recyclable, meaning we are not unnecessarily wasting materials.

The Mailbox is a great example of the Circular Economy principles in practice, where an old building needed a refurb and the architects used what was there to enhance the original structure and work with what they had. This included integrating a living wall instead of using traditional façade materials (we can integrate a living wall as an alternative rain screen cladding), which not only looks beautiful but supports local biodiversity too.



The Mailbox



# BREEAM

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Aiding a design focused on achieving a certain BREEAM rating, a living wall can help improve a building's efficiency, and support on-going sustainability.

This was the case at the University of Nottingham, where the living wall supported achievement of BREEAM Excellent. This building was specifically designed to meet BREEAM and Passivhaus standards.

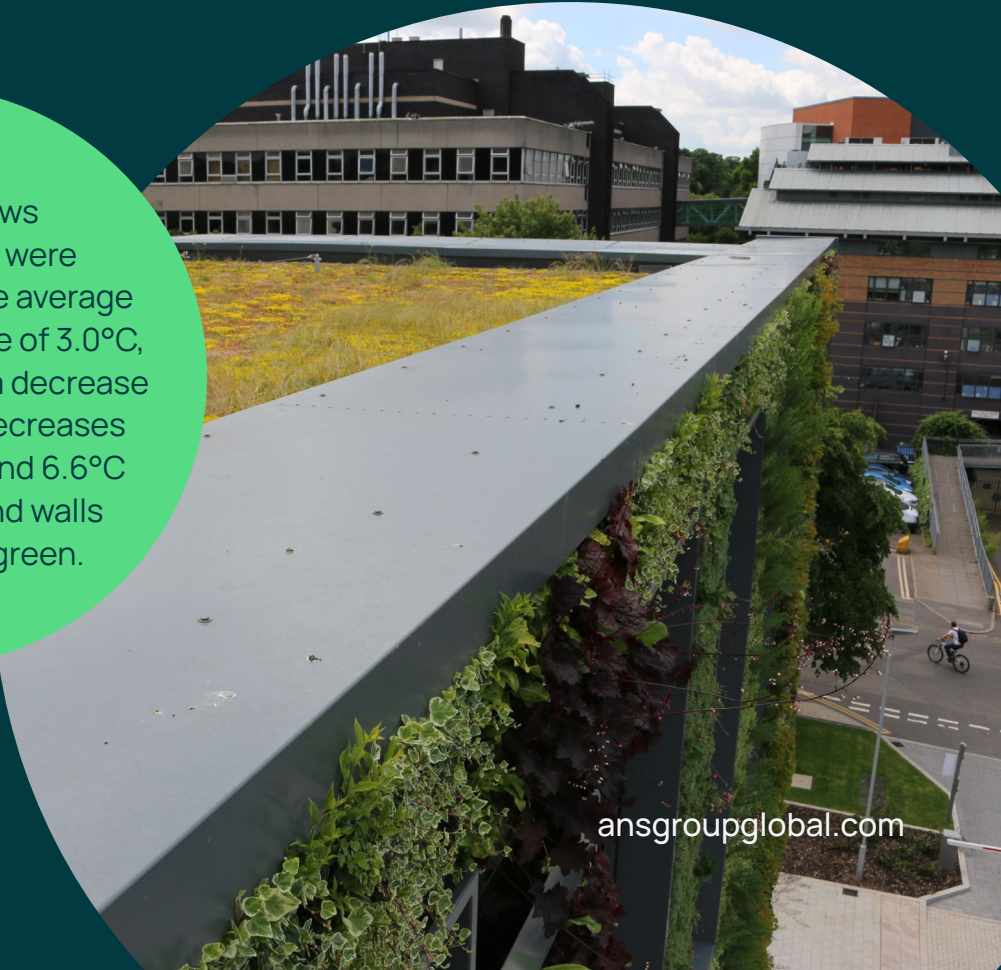


# Temperature Regulation

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In hot, dry summers, green walls have been shown to reduce the temperature of the external building wall behind them by as much as 16°C. Living walls also significantly reduce the 'urban heat island effect' (where human activity and development, like our cities, causes a 'heat island' that is hotter than surrounding rural areas).

Vegetation cools the environment through evapotranspiration and also by creating a shading surface that otherwise absorbs short-wave radiation.



One study shows that where there were living walls, a daytime average temperature decrease of 3.0°C, with a 4.5°C maximum decrease was noted. These decreases increased to 5.6°C and 6.6°C when both roofs and walls are covered with green.

University of Leicester

**ans** living wall

[ansgroupglobal.com](http://ansgroupglobal.com)

## Protective Cladding

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Many buildings must stand up to driving rain, temperature changes, direct sunlight and corrosive dust particles in the air. Living walls provide a natural answer to these issues.

The combination of plants and soil provide effective protection against rain and wind, furthermore 50% of solar energy is absorbed by foliage and a further 30% is reflected. When compared to cladding, paints and other building coatings which deteriorate, green walls can be an effective solution for the long-term sustainability of a structure, and also do not show the build-up of dust which is often noticed on façades next to busy urban areas.





# Acoustics

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In one study, an 80mm thick green wall reduced noise by 15dB.



Our living wall solution at [The NEC](#) was designed for the purpose of providing a site barrier and reducing noise transmission. Integrated into a purpose-built steel frame, the combination of the soil and variety of plants provide a solid sound barrier that successfully deadens unwelcome noises.



The same applies for the vertical greening at [London Wall Place](#), where a calm and tranquil oasis has been created next to one of the busiest roads in the area. When inside the gardens, you'd hardly believe you were in the middle of a bustling noisy city.

# Property Value

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Studies have shown that there is 7-8% less crime in areas with access to nature and increases of **4-5% in property price**. Nature is a premium in the city, and when there is a piece of nature integrated into a property design, this automatically increases the property value.

The biophilia effect highlights our instinctive attraction to nature. We are drawn to places with natural features and we are more likely to spend time there. Research has shown that having plants around a building can **increase real estate values** by up to 20%. Living walls aren't only an environmental asset, but an economic one too.

In a retail setting, the use of vegetation and landscaping leads to increases in rental rates on retail spaces with an increased customer spend of 8-12%.

The Avenue Centre

**ans** living wall

[ansgroupglobal.com](http://ansgroupglobal.com)



# Why is working with us different?

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We don't claim to offer drastically different living roof systems, but what we do promise is a **trusted service**. There are three key areas where we stand out in the market, and take your experience with us to the next level.

## BESPOKE DESIGN

Every project has different needs and challenges. With no 'cut and paste' approach, we're able to tune in to exactly what you're looking to achieve on-site and design around that. Is your aim to improve air quality in the area? Or create a big social impact? **Let's work towards it.**

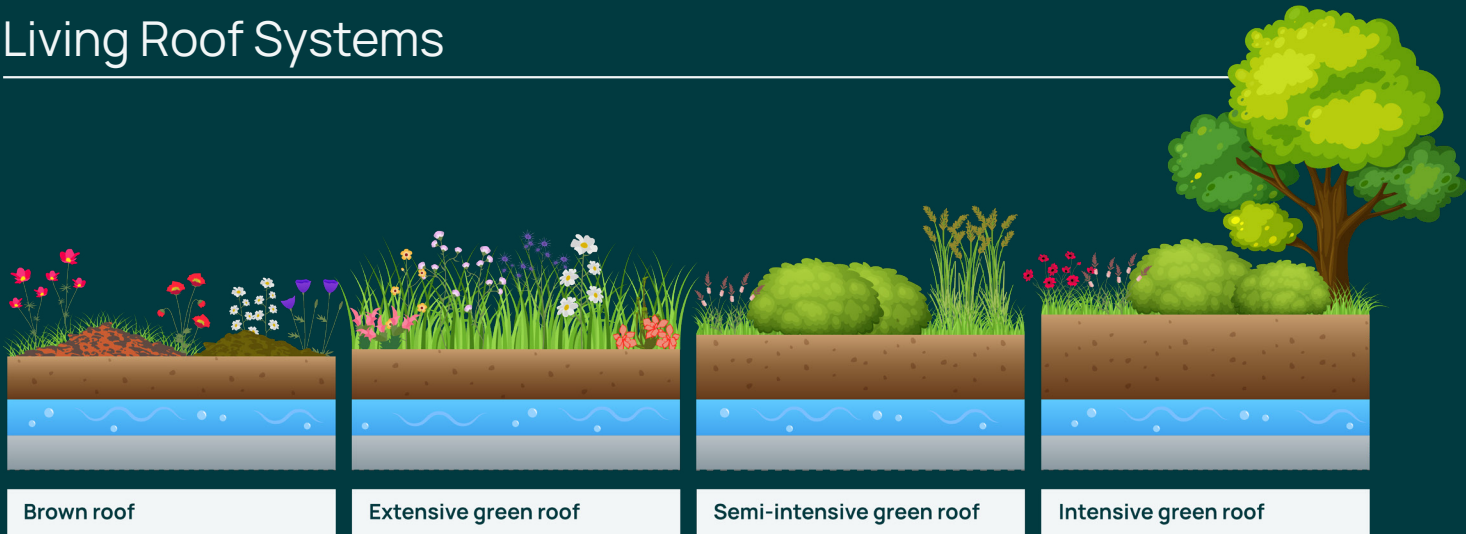
## IN-HOUSE

From the consultancy and design teams through to the maintenance team, all our expertise is in-house. With qualified landscape architects and horticulturists, to staff with backgrounds in site and project management. **You're working with a team that are keen and focused on delivering your vision.**

## ENVIRONMENTAL GAIN

The use of soil in everything we create comes from our passion for designing for environmental gain. We focus on the local area, ecology, your purpose on the project, any specific environmental objectives and site constraints to work out the opportunities for creating environmental assets.

# Living Roof Systems



## What are the main different living roof systems?

- Brown or Biodiverse
- Extensive
- Semi-intensive
- Intensive

The level of irrigation and maintenance required depends on your plant design, location and living roof type. Consider maintenance and irrigation programmes on a project-specific basis. The following is a guide only.

Let's look at the typical characteristics of each green roof type, and tips for how to design a living roof for either biodiversity or biophilia (social impact and human interaction).

# Biodiverse living roof

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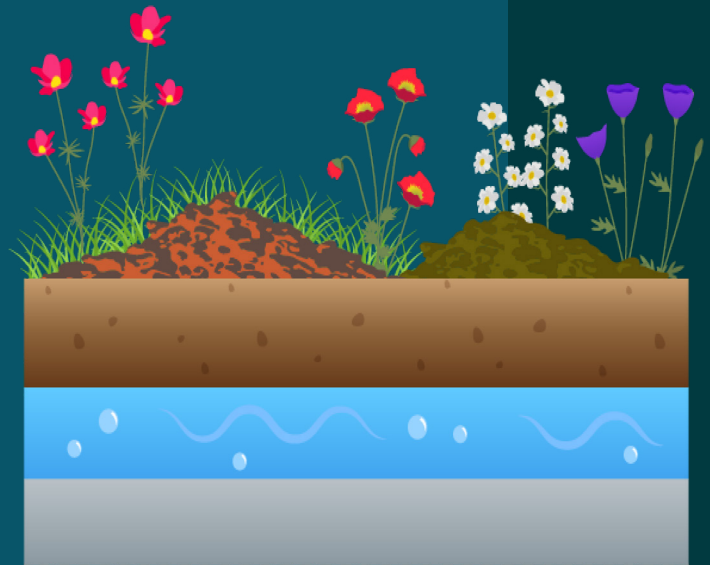
## Overview

Commonly known as 'brown roof', this type of living roof replicates biodiverse brownfield habitats, with an organic intensive substrate.

These are usually for the purpose of improving biodiversity or meeting environmental standards with a roof that is not overlooked, and your client requires minimal maintenance.

### Key features:

- Shallow soil layer of at least 60mm
- Pre-planted or left to naturally seed
- Native wildflowers and grasses
- Log revetments
- Recycled aggregates to provide additional micro-habitats
- Modular or component
- Zero to low maintenance
- Zero to low irrigation



# Extensive living roof

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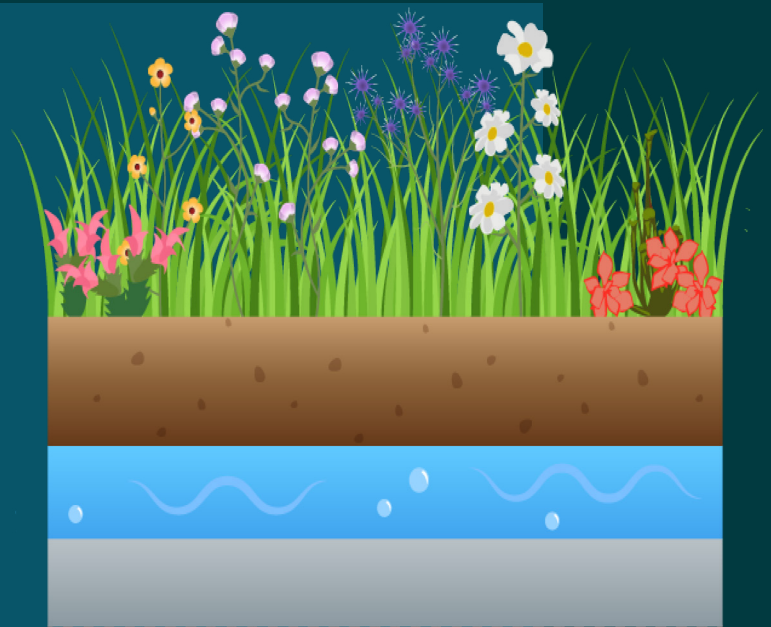
## Overview

The biodiversity value differs according to the soil depth, but as they are often pre-planted with sedums (small, hardy succulents), moss, herbs and grasses, extensive living roofs tend to have lower biodiversity value.

As they come with minimal maintenance and can be a DIY install, they are often used domestically.

### Key features:

- Shallow substrate depth
- Typically pre-planted
- Sedum, moss, herbs and grasses
- Modular or component
- Shallow-rooted plants
- Lower biodiversity value
- Zero to low maintenance
- Zero to low irrigation (required if wildflowers are present)



# Semi-intensive living roof

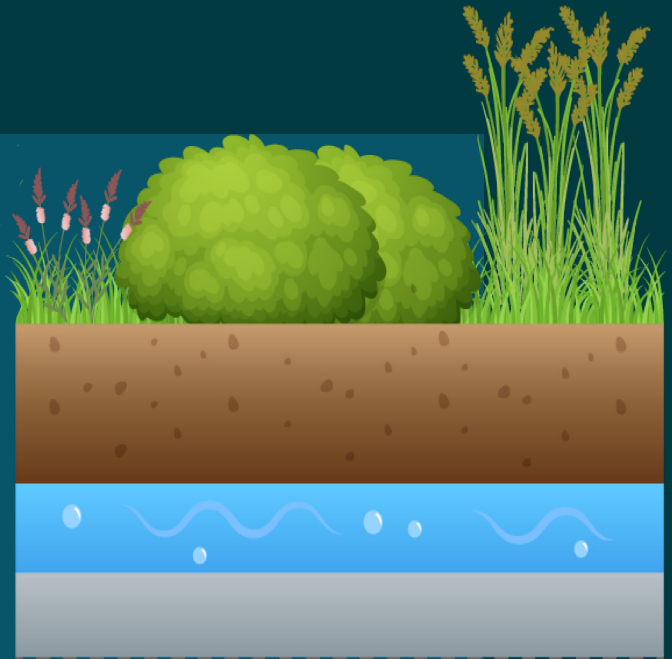
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## Overview

Leaning towards roof gardens, but without the weight of an intensive living roof. You have greater design scope and these roofs can also be used recreationally.

### Key features:

- Deeper substrate
- Wide range of plants to choose from
- Typically component build-up
- Ideal for designed roof (aesthetics)
- Lower biodiverse value if for recreational use
- Periodical maintenance
- Periodical irrigation



# Intensive living roof

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## Overview

Also known as a roof garden, this is the most 'involved' roof type which can be designed to be like a garden environment. The deep soil allows for more design creativity.

### Key features:

- Roof garden
- Deep substrate (>150mm)
- Wide range of plants to choose from
- Typically component build-up
- Allows for trees and other deep-rooted species
- Huge scope for design
- Regular maintenance required
- Regular irrigation





## Biosolar

Biosolar roofs incorporate both solar photovoltaics (PV) and living roof vegetation.

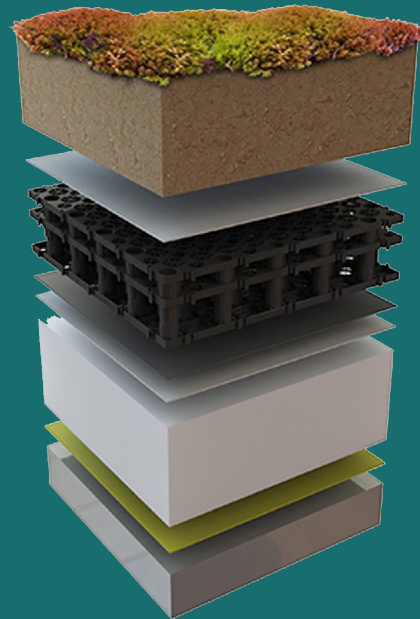
Typically, extensive green roofs are the chosen living roof habitat, as small plant species can be selected which don't block sunlight from the PVs.



## Blue roof

A blue roof is a roof designed for the retention for rainwater above the waterproofing element of the roof. The aim is to increase the volume of water stored and control the amount of water released.

Combining blue roof technology with green roofs increases the overall benefits.



# Design with purpose

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## For Biodiversity

Here are some tips when designing a living roof to improve local biodiversity:

1. Focus on native species.
2. Include flowering plants and sources of nectar.
3. Have a mix of small and deep-rooted species (eg. wildflowers, shrubs and trees).
4. Larger % of herbs, grasses and wildflowers than shrubs.
5. Substrate with a high % of organic matter.
6. Habitat homes, recycled aggregate piles, log revetments.

## For Biophilia

Here are some tips when designing a living roof to encourage interaction with nature:

1. Include walkways, seating and pathways.
2. Design with variety in mind, including large plant variety, different materials, water features.
3. Create a natural garden feel.
4. Design with contours, for example varying soil topography or low-high planting.
5. Include edible plants.
6. Include plants that attract birds, butterflies and bees.
7. Ensure plenty of evergreens and seasonal variations.

You may not be able to apply all these tips to your project due to the living roof type. Head over to [our website](#) to find out what you can do on each living roof type.

# Biodiversity Net Gain (BNG)

Integrating a green roof to meet Biodiversity Net Gain targets?

The living roof type and how it is designed affects its BNG score.

Following the tips detailed in the page above will increase your score. Let's look at some examples.

## Brown roof designed for insects and birds

Biodiversity units per ha delivered

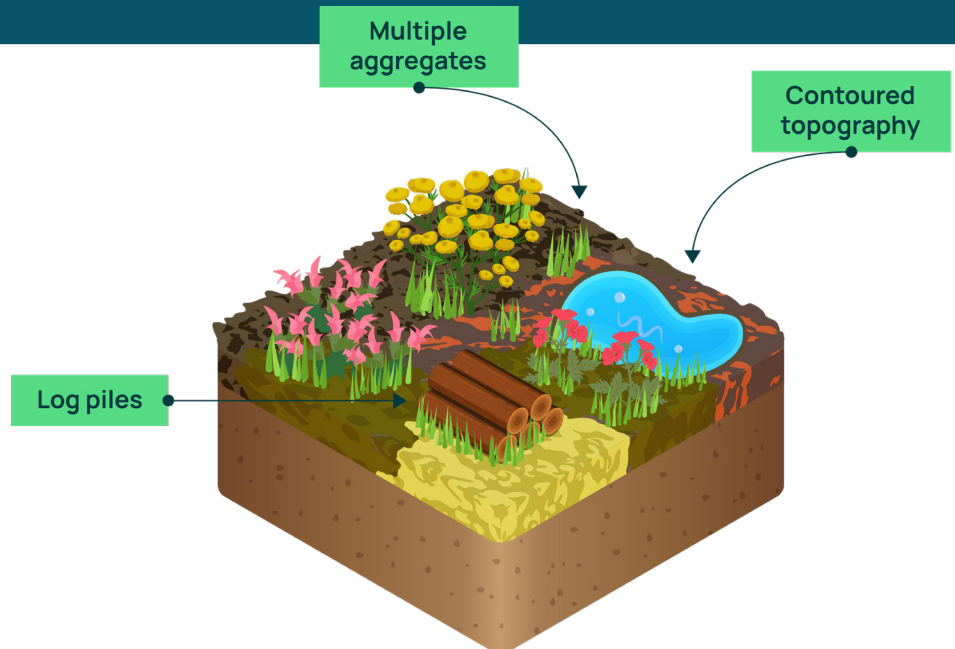
**5.63**

Primary objectives

**Biodiversity**

Attributed condition

**Good**



# Biodiversity Net Gain (BNG)

## — Extensive green roof with a mixture of wildflowers and sedum

Biodiversity units per  
ha delivered

**4.82**

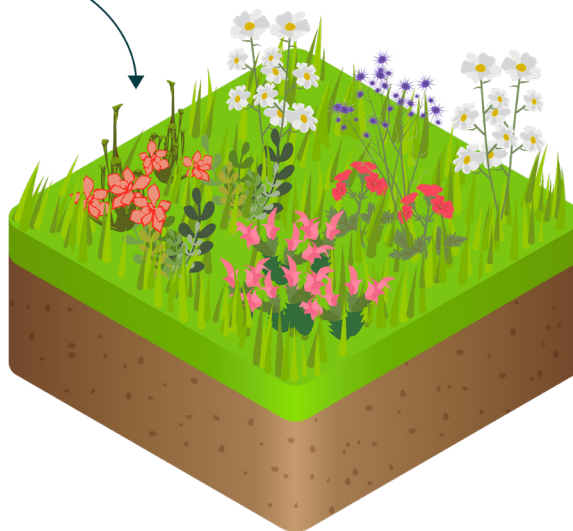
Primary objectives

**Urban cooling and  
drainage**

Attributed condition

**Moderate**

> 30% Sedum



Download our [Building with Biodiversity Net Gain guides](#) for reference in design stages. These give you best practice guidance on designing urban green infrastructure systems to achieve your BNG target. Co-authored with AECOM. Approved by Defra, Natural England and BRE. [Access these here.](#)

# The Process

This follows the same process as a living wall project, so we've picked out the key parts you should know from the five stages.

Consultation

Design


Production

Installation

Maintenance

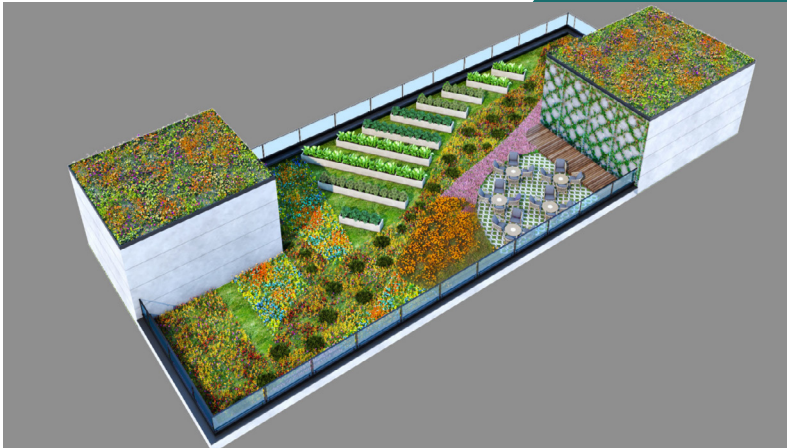
## Design: Plant Selection

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Working with the architects, we developed the overlooked terraces into landscaped areas that focused on providing benefits for biodiversity and well-being, using sources of nectar, seasonal interest and colour. The majority of the plant palette was focused on pollinator planting, and as a result of this you often see honeybees enjoying the different plants, even 70m up in the air!

# Design: Concept Design



Our design team can produce full colour mock-up and design concepts to show what can be done on-site.

These designs are helpful to show the benefits of different planting designs using the chosen plant palette, playing with colour, pattern, texture and 3D effects.

For this project, we designed the roof in a way where even the pathways were designed to be grass rather than paving, with the surrounding wildflower meadows flanking the path and supporting local biodiversity.



Also included was a garden where the staff would grow vegetables including lettuce, tomatoes and herbs, and an informal seating area which could be enjoyed by the staff in their breaks.

# Maintenance

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Victoria MSCP

Brown or biodiverse and extensive roofs typically require very limited maintenance. However, once your designs before more involved and you lean towards the semi-intensive and intensive green roofs, maintenance is key for longevity.

Some living roofs, such as intensive, require as much maintenance as a garden and would need planned maintenance visits with an experienced contractor. To ensure your living roof is a long-term asset, consider maintenance at the start of the project.

Details of maintenance should be included within the specifications, O&M manuals, and on-going management plans for the building.

## Helpful Tip

The maintenance costs should be calculated at the design stage to become part of the management costs of the building and reflected in the service charge within the cost consultants' reports.



# The Benefits of Living Roofs

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Let's go into a bit more detail on the power of living roofs. Most of these are shared with living walls. But let's recap, focusing on some of the following key advantages:

- Air Quality
- Biodiversity
- Planning and Regulation
- Temperature Regulation
- Protective Cladding
- Property Value

# Biodiversity

Biodiversity is hugely important to our quality of life, and this is especially pertinent in our urban spaces, where nature (and therefore biodiversity) is often constructed out.

Soil alone is hugely important for the health of our environment and biodiversity. Soil caters for burrowing insects, solitary bees, stores water and is a water buffer, allows for fungal biodiversity and absorbs particulate matter which could otherwise harm our environment.

Living roofs are the perfect opportunity to bring soil into our urban designs, and it allows us huge scope in incorporating a diverse range of plant species to support local ecology.

Designs can be tailored specifically to meet your objectives and we can bring significant biodiverse value with specific plant species, substrates and materials, including native species and pollinator planting to create habitats for bees and encourage natural colonisation.



## Planning & Regulation

Solve regulatory challenges and planning conditions by designing to hit the environmental targets.

We've worked on several projects where green roofs have been included to help the scheme meet specific standards, such as:

- Biodiversity Net Gain (BNG)
- Urban Greening Factor (UGF)
- Circular Economy
- BREEAM

Pictured: Small section of the living roofs at New Street Square, which achieved BREEAM Excellent.



# Temperature Regulation

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Green roofs remove heat from the air through evapotranspiration, act as insulators for buildings and therefore reduce energy required for heating and cooling.

On a summer day, the temperature of a gravel roof can increase by as much as 25°C to 60 - 80°C. Covered with a green roof, the temperature of that roof will stay at 25°C.

Living roofs also significantly reduce the 'urban heat island effect' (where human activity and development, like our cities, causes a 'heat island' that is hotter than surrounding rural areas).

Vegetation cools the environment through evapotranspiration and also by creating a shading surface that otherwise absorbs short-wave radiation.

One study shows that where there were living walls, a daytime average temperature decrease of 3.0°C, with a 4.5°C maximum decrease was noted. These decreases increased to 5.6°C and 6.6°C when both roofs and walls are covered with green.

University of Leicester



## Protective Cladding

Roofs must stand up to driving rain, puddling, temperature changes, freeze-thaw weathering, direct sunlight and corrosive dust particles in the air.

**Living roofs provide a natural answer to these issues.**

The combination of plants and soil provide effective protection. Plants use the sun's rays to grow rather than letting them break down the waterproofing beneath.

Together, the soil and plants absorb up to 75% of rain water, eliminating puddling and freeze-thaw weathering and the eventual breakdown of the roof membrane.

Did you know, a single ply roof will last approximately 30 years, whereas a green roof extends that to 40-50 years?



# Property Value

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As a living roof increases the roofs lifespan and insulates the building, it is likely that property value will increase as you are saving on operational costs.

The biophilia effect highlights our instinctive attraction to nature. We are drawn to places with natural features and we are more likely to spend time there. A well-designed outdoor rooftop amenity space (likely to be an intensive living roof) could be a deciding factor in whether to rent or buy in a specific building.

Nature is a premium in the city, and when there is a piece of nature integrated into a property design, this automatically increases the property value.

**Living roofs aren't only an environmental asset, but an economic one too.**



# Living Roof FAQs

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Do you have questions on the weight, irrigation, maintenance and other details of green roofs?

You may find it useful to check out our Living Roof FAQs on our website:

The screenshot shows the 'ansglobal' website with a navigation menu including 'Consultancy', 'Living Wall', 'Living Roof', 'About us', 'Learn', and 'Contact'. A phone icon with the number '+44 (0)1243 545818' is in the top right. The main heading is 'FAQ' with a search icon and the text 'Search'. Below this is a message: 'If you have any questions that we haven't covered here, please contact us and we'll do the best we can to answer them.' A filter menu shows 'All', 'Living Wall', 'Living Roof' (highlighted), 'Moss Art', and 'Living Canvas'. The FAQ list includes 'How can I create a roof garden?' and 'What is a biodiverse green roof?'. A green call-to-action box at the bottom left of the screenshot contains the text 'Click here for FAQs'.

# The Foundation of Success

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What matters to us is creating something that is going to last a long time and will continue to fulfil the purpose it was designed for.

But this doesn't happen automatically. As with any greening system, the design stage is the most important part of the process, usually allowing us to find and take advantage of the opportunities for greater sustainability, decrease costs and ensure the purpose of your project is fulfilled. Spending time on this stage will mean a successful finish.

## What makes a natural greening system a long-term asset?

There are 4 key factors which are the founding principles of a successful long-term solution for any green infrastructure system:

# 4

- Natural organic substrate
- Correct plant species selection
- Water management
- Maintenance

## founding principles



# Research References

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## **The Times Investigation**

<https://www.thetimes.co.uk/edition/news/join-our-campaign-5lnvhcl3c>

## **London Living Roofs and Walls Report 2019 - Dusty Gedge and Gary Grant**

## **The Impact Of Green Walls And Roofs To Urban Microclimate In Downtown Dallas, Texas**

[https://rc.library.uta.edu/uta-ir/bitstream/handle/10106/24068/BielazSclar\\_uta\\_2502M\\_12471.pdf?sequence=1](https://rc.library.uta.edu/uta-ir/bitstream/handle/10106/24068/BielazSclar_uta_2502M_12471.pdf?sequence=1)

## **Green Roofs and Green Walls Could they Mitigate the Heat Island Effect**

[https://www.researchgate.net/publication/317904611\\_Green\\_Roofs\\_and\\_Green\\_Walls\\_Could\\_they\\_Mitigate\\_the\\_Heat\\_Island\\_Effect](https://www.researchgate.net/publication/317904611_Green_Roofs_and_Green_Walls_Could_they_Mitigate_the_Heat_Island_Effect)

## **Biophilic Design Research Findings - Mott MacDonald**

# Our Mission

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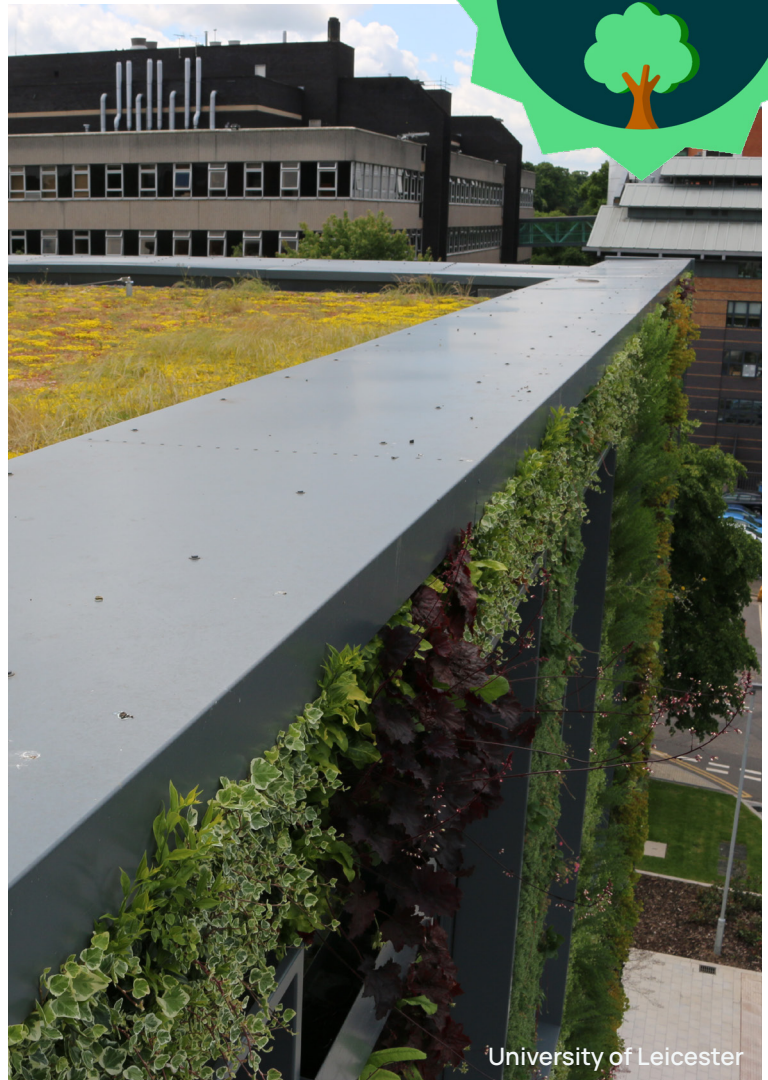
More than half the world's population lives in cities and the number keeps increasing.

As development increases and space becomes more precious, we've looked to the wasted surfaces in our urban areas to re-introduce nature and provide long-term environmental benefits.

Natural soil living walls can clad walls both inside and out, while living roofs transform wasted flat roofs into pockets of nature. We have so many opportunities to bring us closer to nature, improve the health of our environment and make a real difference.

If you have a project or any questions please do get in touch.

enquiries@ans.global  
+44 1243 545818



**ans exterior**

ansgroupglobal.com

# 10,000 Trees Campaign

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10,000

trees planted by 2023



Every year, starting in 2022, we aim to fund 10,000 trees through our partner, Ecologi. Ecologi work with project groups (like the Eden Reforestation Project) to plant forests and support communities all over the world.

## Power of the mangrove

Quite a few of the trees we'll be funding will be mangroves, which are hardy shrubs and trees that thrive in salt water. Studies show that mangroves “sequester carbon at a rate two to four times greater than mature tropical forests”, and contain the “highest carbon density of all terrestrial ecosystems”.

## Carbon sequestration

Did you know that a hectare of mangroves can sequester 3,082 tonnes of CO<sub>2</sub> over a 25 year life time? That's 308kg per tree.

## Responsible reforestation

We do not support monoculture forests and non-native species. This means greater specie diversity and wide-ranging benefits.

**Every project we deliver helps us move closer to this goal.**

**ans exterior**

[ansgroupglobal.com](http://ansgroupglobal.com)