



W.E.A.V.E

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(Water Extraction Attenuating Vapour Envelope)

A biomimetic, fog harvesting pavilion that celebrates the natural water cycle.

Project Type: Modular community pavilion

Design Concept: Biomimetic water collection

Location: Rural-urban fringe / Urban community garden

Budget Estimate: £20,000

Intro:

Water is a quiet narrator. It writes in mist and memory, in stream and storm, and in the lingering echo of rainfall. In the hills and glens of Northern Ireland, water is never just something to avoid, it is an element to witness, sometimes feared, often celebrated, always felt. Visible, audible and tangible.

W.E.A.V.E. is an architectural response to this elemental phenomenon. It takes the form of a light, woven canopy that celebrates the full “canon” of water. From sky to soil and back again, celebrating the intermittent state of water as an active vapor. This is a space not of firm enclosure, but of embrace. A site where fog becomes an experience and rain a performer. Our intent is to create a place that mirrors the ephemeral nature of water while rooting itself in local culture, and the sensory qualities of its presence. Water becomes the medium through which community, memory, and ecological awareness are drawn together.

Design Concept:

Architecture in this instance does not resist nature but learns from it. W.E.A.V.E. is inspired by the forms, cycles & strategies found in biological life, i.e. spider webs collecting dew, trees releasing mist through transpiration, or valleys channeling rain into rivers.



The project's drive & solutions are influenced by water droplets glinting off morning spider webs, fog rolling silently across mountain ridges, and the distant silhouette of the Mourne's looming in the distance. In addition, it recalls past accounts of flax once soaked in shallow dams to prepare for weaving in the linen mills of Belfast. These natural and industrial histories form the thread of the pavilion's conceptual, physical and poetic weave.



Concept Sketch

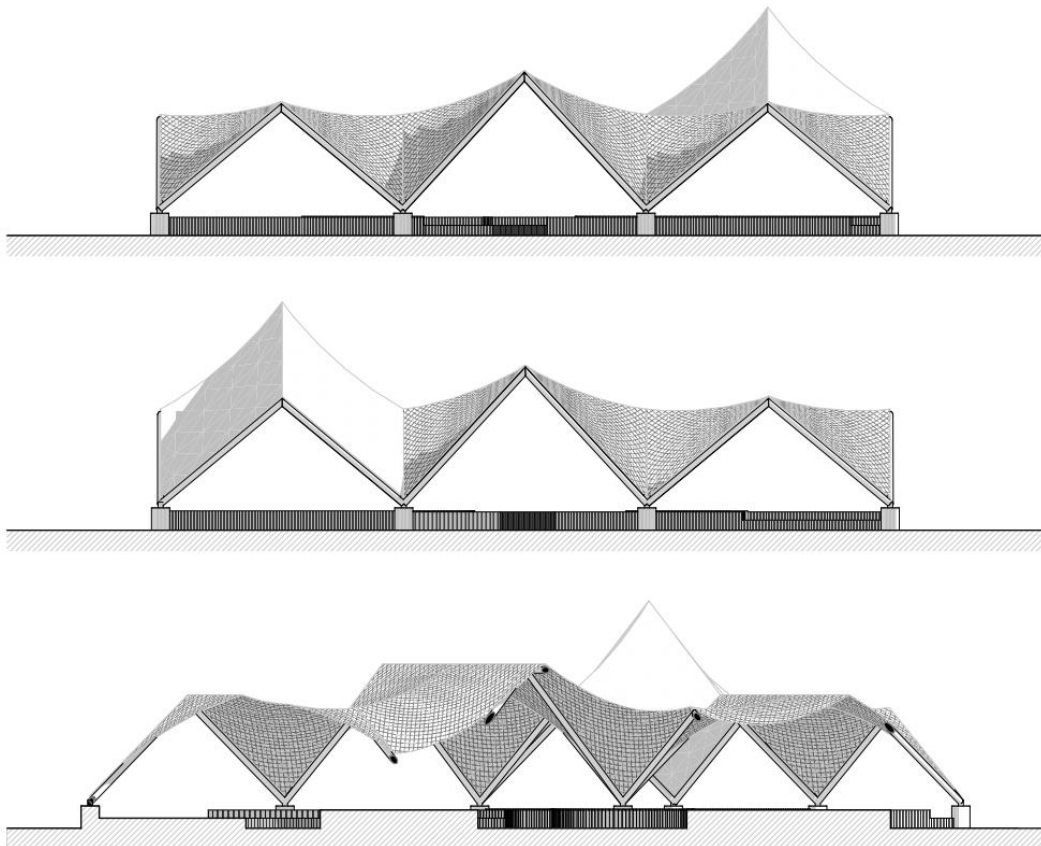
At its heart, W.E.A.V.E. is both function and a feeling. A tensile garden structure that extracts water from the air. Providing sensory delight through mist, reminding us how we are entangled with the natural elements, landscape, and each other.

Structure & Form:

The form is defined by elevation and permeability. From a distance, the pavilion's peaks are reminiscent of the ghosted outline of the distant as triangular modules of tensioned mesh float above a delicate landscape. Each module collects and channels water, abstracting the contours of glacially carved valleys into an architectural geometry - in a web like matrix.

Beneath this elevated web is a landscape of planters and pathways, designed to imitate the braided channels of streams in floodplains, lowlands and wetlands. Movement through the pavilion becomes meandering for an intentional slow walk-through. Filtered light and shifting mist, the pavilion is punctuated by pauses for reflection or conversation.

Metal structural columns sprout like saplings from the ground, supporting the mesh canopy that weaves overhead. Their presence creates a forest-like rhythm, defining micro-spaces that can host individual quiet moments or small collective gatherings. At one corner sits a semi-enclosed social node, a canvased volume that serves as a tented refuge. Lit at night or times of dull light, this structure glows like a lantern in the mist, offering warmth and refuge amidst the shifting atmosphere.



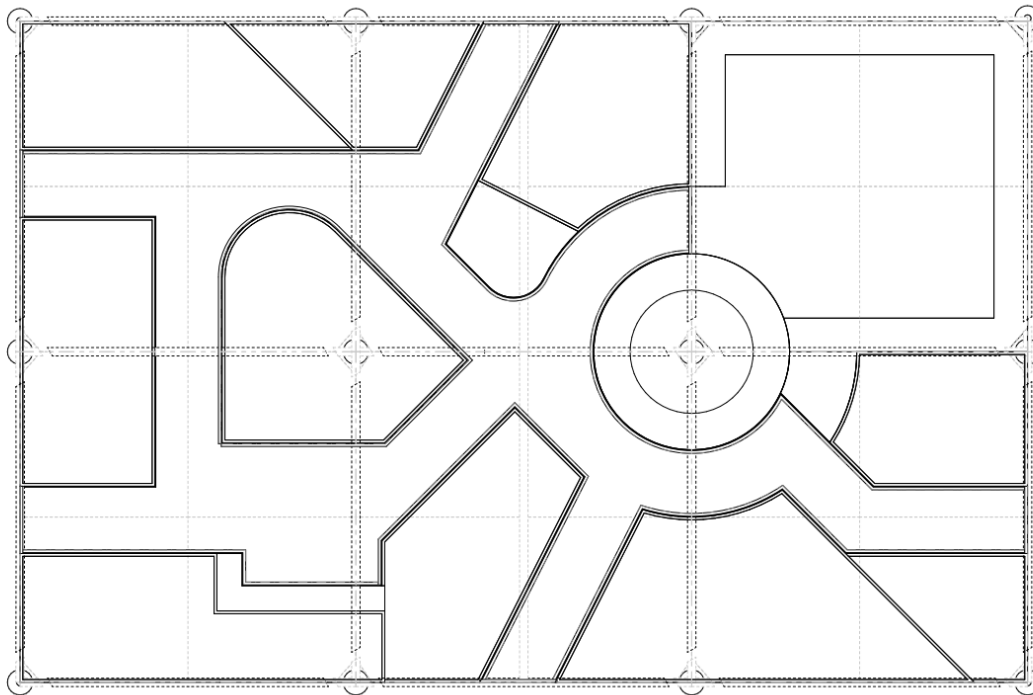
Elevations

Functional Ecology:

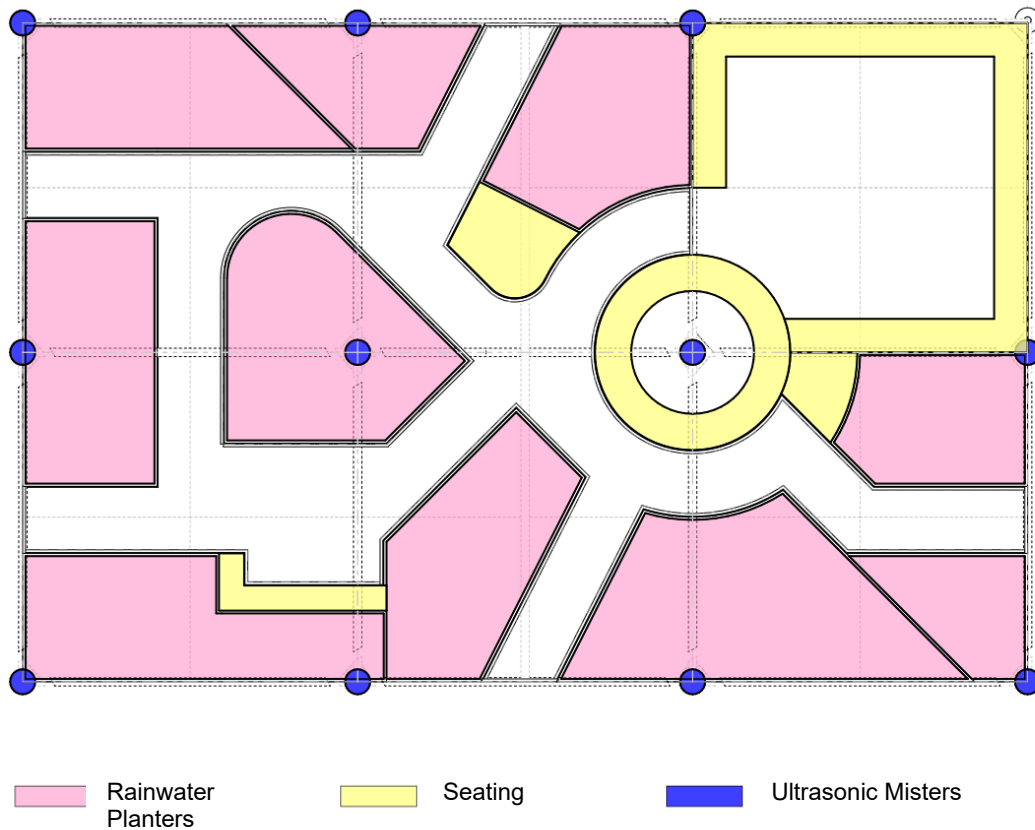
W.E.A.V.E. operates as a small-scale ecological machine, celebrating not only water but its actual movement (water cycle) through the built and natural environment. Its function is embedded in the structure, not hidden behind needless panels or infrastructure.

Fog and Rainwater Harvesting - Woven mesh elements function as fog nets, drawing inspiration from traditional water-harvesting techniques used in places like the Atacama Desert and South America. Here, they are adapted to temperate climates. As atmospheric moisture passes through the tensile canopy, droplets condense on the mesh and is channelled along the branched structure into collection tanks.

Water Reuse and Ultrasonic Misting - Once collected, water is held in tanks beneath the structure & within the planter landscape. A solar-powered efficient and inexpensive ultrasonic misting system releases this water back into the environment as a light fog, turning technical function into sensory spectacle. The mist cools the air, nourishes the plants, and reveals the air's hidden moisture content.



Floor Plan



Diagrammatic Floor Plan

This mist is pedagogical to the pavilion's performance. It completes the water cycle visibly, closing the loop and giving visitors a tactile understanding of atmospheric water processes.

Stormwater Attenuation and SUDS Integration - The pavilion's paths are made of a permeable paved surface (grasscrete), which slows and filters stormwater runoff. Water not used in the misting system is absorbed into surrounding planter beds or infiltrates into the ground for attenuation, taking pressure of local storm water infrastructure. With built and natural systems interlaced, the pavilion turns into a miniature climate-responsive landscape.

If moved and relocated, the installation will leave behind a remnant in the form of a SuDS footprint - a space to be reinhabited by potential future architectural interventions.

Materiality:

The materiality of the pavilion speaks to both its function and its symbolism. Each material was selected for its technical performance, aesthetic resonance, and cultural memory:

- Tensile mesh made from recycled fishing nets or thin metallic wire forms the core water-collecting web.
- Powder coated steel supports as linear elements reference the branches of trees and metal frames common in agricultural buildings, and shipyards. These could be swapped for upcycled utility poles or raw young lightly processed tree trunks.
- Sail canvas or lightweight polyurethane cloth shelters the corner node, a remnant of coastal industries, boats, and wind.
- Permeable paving and planters provide a landscape that is; a sustainable infrastructure, living ecosystem, inviting social aspect, functional drainage, and soft beneath the foot.



Planters in daytime

This is a pavilion of intention. Lightweight, demountable, and modular, it can be scaled to suit different sites, replicated as an educational toolkit, or moved seasonally to respond to community needs.

Spatial Experience:

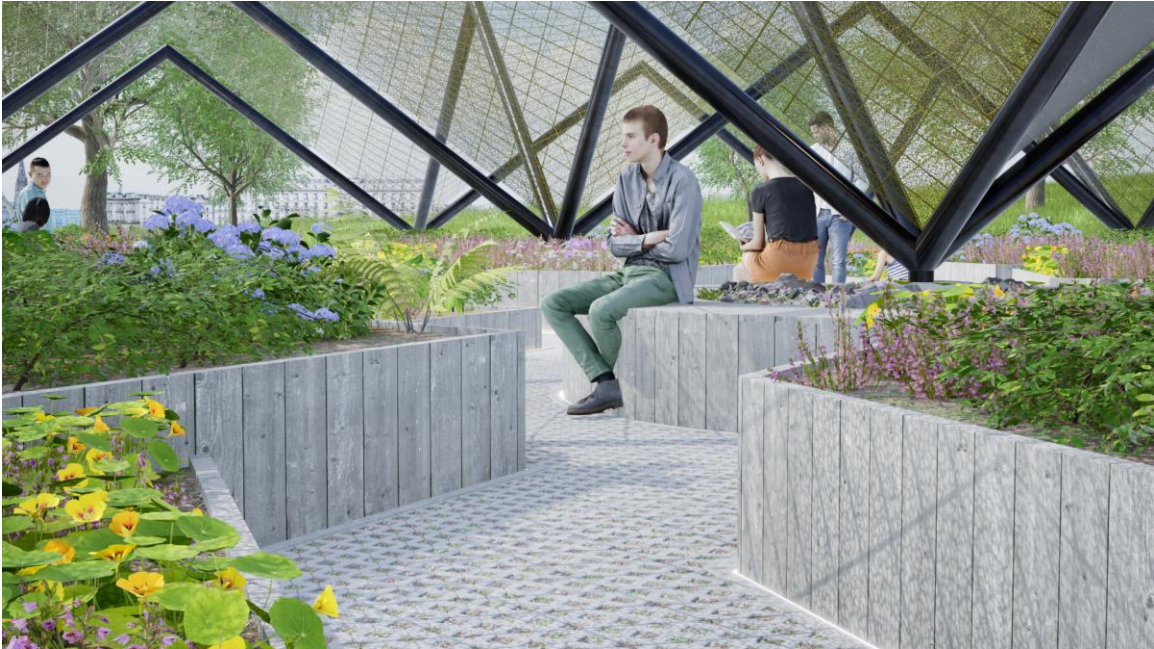
To enter the W.E.A.V.E pavilion is to step into an environment that responds to weather, rather than resists it. The spatial experience is shaped not by fixed boundaries, but by translucency, sound, and atmosphere.



Planters at night

The dew clings to the nets, refracting soft light. Mist may linger low and mysterious, encouraging quiet reflection (the natural process is aided for performance by the selected ground treatment). Rain adds rhythm, each drop is audible as it lands on the tensile fabric and pools in shallow basins. At night, the entire space transforms under the lantern-glow of the corner node, aided by directional LED strip lighting along the pathways.

Every visitor's journey through the pavilion is different. Sometimes open and social; other times veiled and introspective. Always alive. Always listening to the weather. Even the wind will affect the experience.



Meandering Path



Social area

Program, Community & Cultural Layers:

Though delicate in appearance, W.E.A.V.E is a resilient social structure. It performs a variety of roles for the community it serves, such as:

- A gathering space for educational workshops; small performances, storytelling events, or quiet conversation.
- An environmental outdoor classroom where the water cycle becomes visible. Climate systems are felt and taught through experience.
- A cultural and architectural bridge, gesturing to Northern Ireland's rich linen heritage, maritime industry and agricultural history.



Pavillion front (Day)



Pavillion front (night)

Technical Overview & Budget:

The pavilion is designed with both affordability and replicability in mind. Prefabricated elements simplify installation and allow the structure to be demounted or adapted for future reuse.

Budget Estimate: £20,000

<i>Component</i>	<i>Approx. Cost</i>
<i>Modular structural supports</i>	£7,000
<i>Tensile mesh (fog nets)</i>	£2,000
<i>Water collection system</i>	£1,300
<i>Ultrasonic misters</i>	£1,500
<i>Canvas canopy</i>	£1,550
<i>Planters & soil</i>	£2,200
<i>Permeable paving (grasscrete)</i>	£4,200
<i>Lighting & installation</i>	£1,750
<i>Total Estimate:</i>	£20,000

Planting Narrative:

Inspired by the wetlands of Northern Ireland, the suggested planting scheme weaves colour, texture, and ecology into a resilient urban garden. Designed for fog and mist irrigation, the mix favours native species that thrive in cool, wet environmental conditions.

Palette & Species (native / climate-suited):

- Flax (*Linum usitatissimum*) – symbolic of the linen industry; delicate sky-blue flowers.
- Yellow flag iris (*Iris pseudacorus*) – bold wetland yellow and strong verticals.
- Marsh marigold (*Caltha palustris*) – bright early spring golds for vitality.
- Primrose (*Primula vulgaris*) – soft lemon tones in shaded planters.
- Meadowsweet (*Filipendula ulmaria*) – creamy plumes, heritage connection to retting pools.
- Cuckooflower (*Cardamine pratensis*) – pale lilac, loved by pollinators.
- Foxglove (*Digitalis purpurea*) – deep purple spires for height and drama.

- Native sedges (*Carex* spp.) & ferns (*Asplenium*, *Dryopteris*) – evergreen texture and structure.
- Thrift (*Armeria maritima*) – compact pink blooms for colour continuity and resilience.

Planting style - Layered, naturalistic clusters within urban planters, moving from wetland cores to drier edges.

Precedents & Inspirations:

- Blur Pavilion (Diller Scofidio + Renfro) Atmosphere as architecture.
- Spider Webs (a form of Biomimetic Design).
- Fog Nets (Water harvesting from thin air).
- Irish Linen Heritage - Threads, looms, webs as cultural memory.
- Glens & Coastal Landscapes – The drama and poetry of water in the wild.

Conclusion:

W.E.A.V.E is not about dominating the site but working in concert with it. It allows us to see what is normally invisible, to feel the weight of air when saturated with water, to see rain not as a nuisance but as an element to be celebrated. It is a space for gathering, for climate literacy, and for quiet awe. A place where community and ecology meet in mist.

