Wendon
Submitted by Elliott Wood Partnership Limited

Awards category
Early housing scheme – not yet completed

Lead or collaborating organisation(s)	Client: Steve & Hilary Troote Lead: Ström Architects Visualisations: David Schnabel Structural Engineer: Jensen Hunt Design Civil Engineer: Elliott Wood Partnership Limited
Location of SuDS	Wendon, Mersey Street, Borth Y Gest, Porthmadog, LL49 9UF

1. SuDS overview

SuDS components used	• Permeable paving • Tree pits • Raingardens • Living Roof • Filter strips
Size of the scheme and its local context	**Site Location and Size** The site is accessed via Mersey Street which runs up to the site from Borth Y Gest within the County of Gwynedd in Wales. The total site area is approximately 2,350m^2 (0.235 hectares).  **Figure 1:** Site Location Plan (© Google Earth)

Existing Site Layout

Situated high up on the cliffs overlooking the river Dwyryd, in the coastal rural village of Borth-y-Gest, is a dwelling called Wendon.

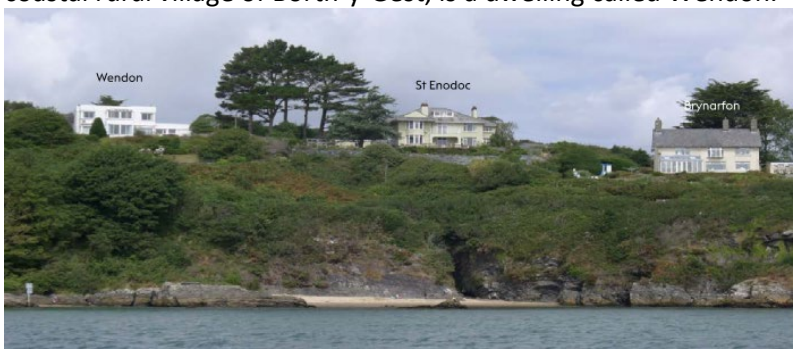
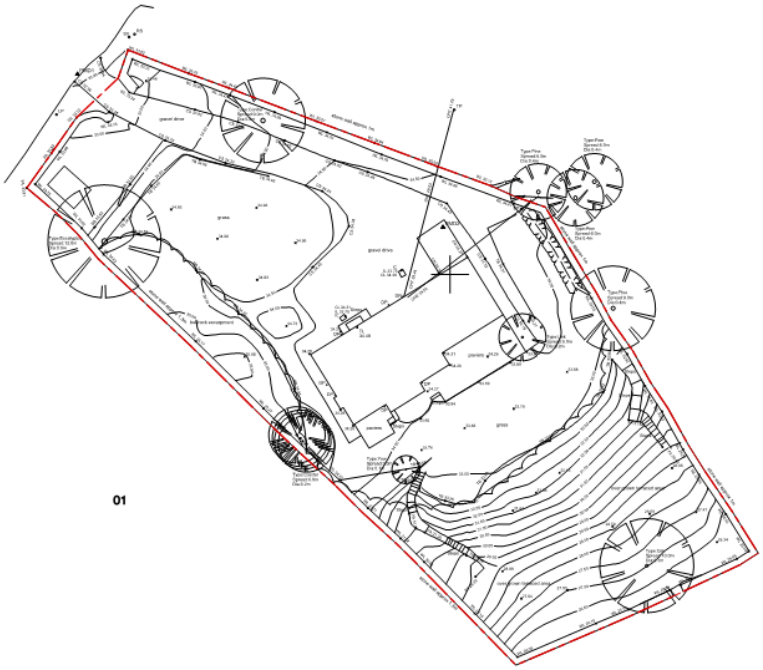


Figure 2: View of Wendon (existing dwelling) from the river Dwyryd

Figure 3: View from Wendon over the river Dwyryd

Wendon is an existing dwelling that holds sentimental value to our client, having spent many happy holidays there during their childhood. After years of unoccupancy, the existing house had fallen into an unsafe state. After purchase by the clients, the design team were commissioned to design a replacement contemporary family home where habitation is futureproofed for subsequent years and generations.

The site was occupied by a dilapidated two-storey house, located in the centre of the site, with surrounding garden / lawn and an unpaved driveway leading from Mersey Street.

	 **Figure 4:** Existing Site Layout (© Google Earth) **Topography** The topography of the existing site, as represented by the contours on Figure 2 above show that the site is relatively flat in the middle - in and around the existing dwelling at around 34.4m AOD. The site slopes toward Mersey Street, falling from the existing dwelling at around 34.4m AOD to around 33m AOD at Mersey Street along the length of the driveway. At the rear of the existing dwelling is an area of flat lawn which runs into a steep slope / escarpment that falls towards the coast.
Approximate age of scheme (years)	0 (completed April 2024)
Benefits of the scheme	• Reduces the burden on the dated combined local sewer network, thus reducing local flood risk. • Improves habitat opportunity, increasing biodiversity. • Provides bioretention and filtration which in turn improves water quality. • Groundwater re-charge. • Reduces offsite discharge volume. • Improved insulation to the building. • Improved air quality. • Carbon sequestration. • Pollution prevention.

Briefly describe the scheme	Situated on a cliff, the geology is bedrock overlain with limited superficial deposits. Consequently, soil infiltration rates exhibit a patchy distribution, contingent upon the depth of superficial layers and the integrity of the underlying bedrock. The existing dwelling discharged both foul and surface water into the combined sewer located on Mersey Street, which subsequently drained through the village of Borth Y Gest. During RIBA Stage 1, we scoped and procured extensive site investigations to identify suitable areas for landscape led sustainable drainage at the surface. These areas were locations where the superficial deposits were deep enough, and the underlying bedrock was fractured enough to support infiltration. Once established, we worked with the team to curate a site layout and landscape that harmonised the underlying geology and topography. We prioritised surface SuDS features such as filter strips, raingardens, living roofs, permeable paving, and tree pits. The outcome is a self-sustaining landscape that flourishes year-round, offering countless advantages over its pre-developed state. The project serves as a testament to the efficacy of small-scale, well-integrated SuDS solutions, showcasing their ability to be implemented at a fraction of the cost compared to a tanked solution, which are often the default choice in similar scenarios.

2. SuDS details

No.	Question	Answer
1	What difference has this scheme made to the local community or area?	This project showcases the integration of sustainable drainage methods on a household scale, emphasising affordability and landscape enhancement. Its purpose is to inspire others to emulate it by either: a) implementing small, incremental retrofit changes that cumulatively yield significant benefits, or b) serving as a model for other minor developments, illustrating how sustainable drainage techniques can be applied at a plot level without necessitating large central buried attenuation tanks. Furthermore, this sustainable drainage system has removed the surface water strain it once placed on the local combined sewer network, reducing local flood risk, contributing to a healthier and more resilient community.

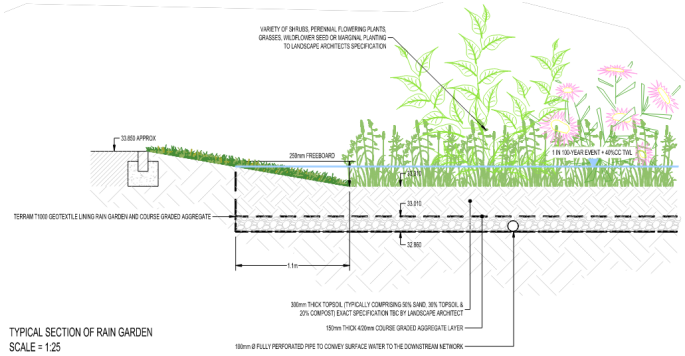
2	What is exceptional about this scheme beyond a standard approach?	**Accountability and Accessibility:** Setting a precedent for other homeowners, showcasing the feasibility and practicality of how surface water can be managed in the landscape. **Knowledge and Understanding:** The scheme provides a domestic client with a comprehensive understanding of the sustainable drainage system in a visual, tangible manner, empowering them to confidently explain its workings to others. This level of knowledge dissemination fosters a culture of awareness and encourages wider adoption of sustainable practices. **Seamless Integration:** Incorporating sustainable drainage techniques into the landscape without necessitating additional capital expenditure or special maintenance provisions.
3	How much work went into getting this scheme realised?	Considerable effort went into realising this scheme: • Educating the client and design team on the SAB approval process (crucial as it was the architect's first project in Wales). • Presenting the SuDS strategy to what was initially an uninformed client, detailing its functions and benefits. • Following up with a detailed run through of its maintenance (akin to managing a typical garden). • Identifying knowledge gaps and providing landscape architect recommendations for well-considered planting execution. • Guiding the Project Manager to ensure an appropriate contracting team was appointed, one familiar with the construction of landscape-led sustainable drainage. • Re-capping the ongoing care and maintenance with the Client when nearing completion.

4	Is this scheme part of a masterplan or integrated into other initiatives?	No
5	What value does this scheme provide to the local area and beyond?	An example of sustainable drainage at the domestic end of the construction market. A market where sustainable drainage is quite often overlooked or siloed off with a series of discrete buried engineering interventions. This scheme provides tangible and scalable examples for other small-scale residential projects. The more we champion projects like this, the greater the impact we can have locally and regionally through small incremental changes.
6	What challenges/problems needed to be addressed to realise this scheme?	The initial challenge we had to overcome was the geology, initially we thought there was no superficial deposits, just bedrock. However, a staged approach to the ground investigation enabled us to hone in on opportunities. The need to educate to change the perceptions of others throughout the design process was also a key challenge. Taking an open and calm approach we used multiple mediums to explain and document the requirement and benefits of such a SuDS system, contextualise the maintenance and how it would look. We also had to educate the team on the SAB approval process.

7	How does the scheme address related issues such as water scarcity, nutrient neutrality, or biodiversity net gain?	Prior to the development, the site lacked diversity, consisting of dilapidated dwelling, unkept grass and occasional shrub. The projects landscape led approach to blue/green infrastructure has addressed the issues of water scarcity, biodiversity net gain and local flood risk. The result is a rich and diverse landscape across the site and building. This has provided biodiversity gains through enhanced and diverse landscaping doubling as great amenity. The SuDS strategy contributes to ground water recharge through infiltrating rainwater rather than discharging to the combined sewer – improving flood risk locally and reducing potable water demand through passive irrigation of the landscape.
8	Is learning from the scheme continually captured and communicated? Please give examples.	We have arranged with the clients to meet every 6-months for the first 3-years following practical completion to discuss how they are finding the operation and maintenance of the system. Emphasis was placed on implementing this process on this project as it is a small-scale residential project where we have direct access to the end-user that will be maintaining and operating the system. This feedback mechanism has been pursued to ensure we can gather lessons learned on what is working and what is not so we can adapt in the future to align best with private residential owners.

9	What approaches/measures are taken to ensure the scheme is properly managed and maintained?	Working directly with the Clients, who will be the end users, we were able to engage with them during the design development of the sustainable drainage strategy to ensure they were educated and content with the proposals. They welcomed the landscape led approach. As keen gardeners they enjoyed the harmonious nature of the surface water drainage and landscape living together with one feeding the other. For the avoidance of doubt, and if the house is sold, we prepared a maintenance strategy; a copy of which is held by the client for reference.
10	Have you collected any feedback on your scheme? What do people say about it? Can you provide any quotes?	No unfortunately not yet.

3. Supporting materials

Image (low resolution)	Caption	Image credit
	Existing dwelling	Ström Architects
	Raingarden Sectional Detail	Elliott Wood

	Proposed Below Ground Drainage Drawing	Elliott Wood
	Completed living roof	Ström Architects
	CGI Proposed replacement dwelling, main entrance with rain garden in foreground.	David Schnabel

	CGI Proposed replacement dwelling, rear landscaping	David Schnabel