

University of Sussex - Accelerator Building

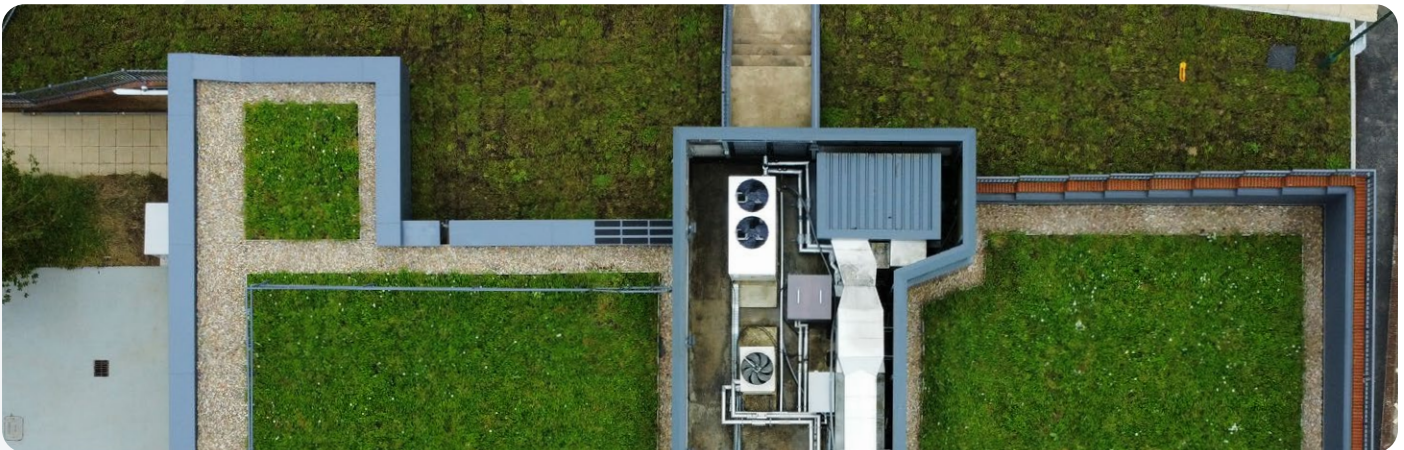


Garland System
Green Shield (+ StressPly Flex Plus)

Sector
Education

Client
University of Sussex

Site
Accelerator Building



Originally opened in 1972, the University of Sussex's Accelerator Building was integrated into the hillside of the physics complex to house a three million volt Van de Graaf Accelerator.

Today, it plays a key role in physics and material sciences research, supporting the university's scientific achievements. A high-performance roofing system was required to future-proof the facility, offering watertight protection, superior thermal efficiency, and alignment with the university's sustainability goals.

The University of Sussex and building surveyors Gleeds instructed **Garland UK** Technical Manager Sam Rigden to deliver a roof system that ensured long-term waterproofing and improved the campus's energy efficiency as part of the university's broader net zero action plan.

Challenge

This project posed highly specialised challenges, demanding innovative and precise solutions to uphold the client's expectations and the university's operational integrity.

The roof covering required replacement due to several leaks identified throughout the building, posing a risk to the building envelope and contents. The presence of high-value research equipment made water ingress prevention an absolute priority. Compounding the complexity, the original building fabric was buried beneath 2 metres of soil, requiring meticulous excavation to avoid compromising the structure or equipment.

Addressing these challenges necessitated implementing a robust and



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technically advanced waterproofing system. This system needed immediate protection during the excavation phase, guard against weather-related risks, and deliver long-term performance to ensure operational reliability once the project was completed.

Additionally, the project included integrating a sustainable green roofing system that aligned with the university's environmental objectives. This aspect of the project aimed to enhance biodiversity, improve air quality, and increase the building's energy efficiency. Achieving these goals required the careful selection of materials and precise coordination between all stakeholders to ensure the roofing system seamlessly integrated with the existing infrastructure while meeting sustainability and performance benchmarks.

Solution

The installation process began with the careful excavation of the existing earth by the principal contractor, i4 Projects, to expose the original concrete screed and roof deck. Once the substrate was exposed, a new layer of self-levelling compound was applied across the roof, creating a smooth and robust surface critical for the performance of the new waterproofing system.

Garland UK's approved contractor, **Sussex Asphalt Roofing**, prepared the deck with Garla-Prime, a high-performance bituminous primer that enhanced adhesion and durability. The Torch Flex VCL membrane was then torch-applied to the surface, providing a secure vapour control layer with expertly sealed 80mm side laps and 100mm end laps to ensure complete watertightness.

To address thermal performance, a combination of flat board and tapered PIR insulation was installed to achieve 0.18 W/m²k, enhancing energy efficiency and aligning with the University's sustainability goals. The Torch Ultra-Vent Base layer was applied over the insulation as a durable foundation for the final waterproofing.

The top waterproofing layer featured **StressPly Flex Plus** Anti-Root, an advanced SBS-modified bitumen capsheet. This high-performance material was applied with precision, offering superior tensile strength, flexibility, and resistance to weathering. Together, the multi-layered system provided a durable, long-lasting waterproofing solution designed to meet the unique demands of the building.



During Construction



Upon Completion

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The project's final phase focused on sustainability. To safeguard the waterproofing system from the semi-extensive green roof system, a semi-intensity protection mat was applied, forming a protective barrier. The roof was then completed with Garland UK's **Green Shield Wildflower system**, designed to enhance biodiversity, improve air quality, and deliver a visually striking finish. With excellent drainage capacity and various plant options, the system added significant environmental value and further improved the building's energy efficiency, supporting the university's commitment to sustainability.

Outcome

Technical Manager Sam Rigden specified and oversaw the roofing project, which received hands-on support through twice-weekly site visits throughout the work. The proactive management ensured that all stakeholders, including i4 Projects, Gleeds, Studio 4 Architects, and the university, were kept informed via regular progress reports delivered through Garland's **Roof Asset Management Programme (RAMP)** system.

Reflecting on the project, Sam Rigden commented, ***"This refurbishment will significantly impact the university, providing a watertight and energy-efficient building that ensures the protection of vital research equipment while enhancing the overall campus environment. It's rewarding to know that this work directly supports students and researchers in achieving their academic and scientific goals within a sustainable, modern facility."***

Garland's collaborative approach, which prioritised close coordination with contractors, architects, and the client, was pivotal in overcoming the project's unique challenges. This project delivered a watertight, energy-efficient facility that protects vital research while enhancing the wider campus, supporting students, academics, and long-term sustainability goals. To underscore its commitment to quality and reliability, Garland UK provided the client with an industry-leading **Single-Point Guarantee of 25 years** + 5 years. This guarantee ensures peace of mind and long-term value, safeguarding the building against future risks and reducing lifecycle costs.



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