



**Politecnico  
di Torino**

## **Honors Thesis**

---

**Master of Science in Architecture Construction City**

**Abstract**

**Eco-minimalism and GAIA Architects: Analysis of a building of high ecological value.**

**Tutor/Correlator**

**Andrea Bocco Guarneri**

**Candidate**

**Gabriele Vangelista**

**February 2022**

GAIA Architects has been pioneering ecological design in Scotland since the early 1990s. Their philosophy, named eco-minimalism by their chief architect Howard Liddell, rejects the greenwashing of contemporary sustainable architecture in favour of simpler, more effective solutions. Through detailed scientific assessments of their projects, they were able to design buildings that aim to solve today's most pressing issues of sustainable construction with the use of extremely low-technologies rather than the high-technologies commonly associated with 'green' architecture.

The first part of this thesis provides a description of the main aspects of eco-minimalism, useful to understand GAIA's design choices and project outcomes. The second section outlines a selection of their most important and exemplificative projects, illustrating both the evolution and the recurrent sustainable features of their work. Further, the third part of this thesis focuses on a case study on the Passivhaus-certified dwelling called Plummerswood. The analysis provides an evaluation of its embodied energy and carbons and highlights its high environmental qualities achieved with the use of Brettstapel panels for its load-bearing structure. Brettstapel is in fact a highly sustainable construction system that, although used in central Europe, is hardly known in other parts of the continent. This study, while showing the high ecological qualities of Plummerswood, underlines a lack of research on the embodied energy and carbons of the Brettstapel construction system and the need for additional studies on the matter.



*Image credits: Graham Riddell*