STRUCTURAL REPORT STATEMENT
LIGHTWEIGHT ACOUSTIC STRUCTURE

1. INTRODUCTION

This report provides a detailed structural engineering assessment of the proposed lightweight acoustic enclosure. It has been prepared to clarify the structural behaviour, confirm loading characteristics, and formally rebut claims that the structure constitutes a bulky or permanent construction. The assessment is based on standard engineering principles, material properties, and typical loading assumptions applicable to lightweight external structures.

2. STRUCTURAL COMPOSITION

The proposed structure comprises aluminium vertical posts, horizontal aluminium framing members, and 30mm laminated acoustic glazing panels. Secondary enclosure elements include lightweight plastic sheeting or polycarbonate panels. The structure is supported on a timber decking platform constructed using C24 graded timber joists. No masonry, reinforced concrete superstructure, or traditional loadbearing wall systems are incorporated within the design.

3. LIGHTWEIGHT CLASSIFICATION

The structure is classified as lightweight due to the low self-weight of aluminium framing and non-loadbearing glazing systems. Unlike traditional buildings, the structure does not rely on mass for stability. The absence of strip foundations, reinforced slabs, or heavy steel beams further confirms its classification. The construction methodology aligns with lightweight systems such as pergolas, canopies, and demountable enclosures commonly used in residential environments.

4. FOUNDATION AND SUPPORT SYSTEM

The structure is supported on discrete pad foundations typically sized at approximately 600mm x 600mm x 600mm. These foundations are isolated and do not form a continuous loadbearing system. Loads are transferred vertically through aluminium posts into the pads and then into the ground. This form of support minimises ground disturbance and avoids integration into the surrounding soil structure, reinforcing the temporary and reversible nature of the installation.

5. LOAD ANALYSIS

The total applied load, including dead load (self-weight) and imposed load, is estimated to be within the range of 0.6 kN/m² to 1.0 kN/m². This loading is comparable to standard domestic decking and significantly lower than typical residential building loads, which often exceed 2.5 kN/m². The glass panels are supported continuously within framing systems, ensuring load distribution without point stress concentrations. No significant lateral or horizontal structural loading is introduced beyond minor wind effects.

6. STRUCTURAL BEHAVIOUR

The structure behaves as a simple framed system with vertical load paths. Aluminium posts act in compression, while horizontal members provide stability and support for glazing. Lateral stability is achieved through frame rigidity and panel interaction. The structure does not rely on shear walls, core systems, or deep foundations, further distinguishing it from permanent construction.

7. DEMOUNTABILITY AND REVERSIBILITY

All structural components are mechanically fixed using bolted connections. Base plates are anchored to the foundation using removable fixings such as anchor bolts. No elements are cast monolithically into the ground or permanently bonded. As a result, the structure can be dismantled in full using standard tools, and all components can be removed without causing structural damage to the site or surrounding elements.

8. IMPACT ON EXISTING STRUCTURE

The installation is structurally independent from any existing building. It does not impose loads onto existing walls, roofs, or foundations. No structural alterations are required to the existing property. The risk of structural interaction or damage is negligible due to the independent support system.

9. RESPONSE TO CLAIM OF BULKINESS

The classification of the structure as 'bulky' is not supported from an engineering perspective. Structural bulk is defined by mass and load intensity, both of which are low in this case. The use of lightweight materials and minimal structural depth results in a low-mass system. Visual presence alone does not equate to structural bulk.

10. RESPONSE TO CLAIM OF PERMANENCE

The structure does not meet the criteria of a permanent building. It is not founded on continuous foundations, nor is it integrated into existing structures. The use of mechanical fixings and modular components ensures that the structure remains fully reversible and temporary in nature.

11. CONCLUSION

In conclusion, the proposed structure is a lightweight, low-load, and demountable system. It is structurally independent, imposes minimal loading, and can be removed without permanent impact. It does not meet the engineering definition of a bulky or permanent structure and is appropriate for its intended use.