Sto Ltd
The Knowledge Centre
Wyboston lakes
Great North road
Wyboston
MK44 3BY

Dear Sirs,

RE: Kings College Court, application of Sto Resin Brick Slips

We write with reference to the above project, where the project architect has specified the use of Sto Resin Brick slips as the cladding finish for our external wall insulation system.

We understand that the application in accordance with condition 4 for planning consent has been refused on the grounds that the use of the "synthetic render slips would reduce the quality as well as the long term durability of the building".

Furthermore, the council assessment of the application draws specific conclusions as to the characteristics and performance of the resin brick slip. We wish to provide some further information in support of the product to allay the Council's concerns.

Sto are market leaders in external wall insulation and render technology and are widely considered within the industry as the premium choice for such products. Quality is not derived from the type of product alone, it is a measure of the performance and characteristics of the component parts of the product formulation. Such products may be considered synthetic but the bulk of the materials used are naturally occurring and mineralic in nature. Many high performance modern construction materials take a basis from more traditional 'natural' materials and then improve the performance and properties of the product by formulating with additional materials/additives. Improvements can include flexibility, bond strength, colour fastness, impact resistance etc. The degree of improvement or 'quality' will depend upon the performance of the constituents that are used in the formulation. Sto has earned its' reputation as the premium supplier based on the quality of products that are produced. We only use the best polymers, the best pigments, the best fillers etc, and it is the use of the best that's available that provides the basis for Sto's reputation.

Although the resin brick slip is a *different* product to a clay brick slip this does not mean that it is in any way of a lower quality and nor would it make the building any less for its' inclusion in the façade. Indeed there are many drawbacks of using a clay brick slip, which are universally overcome by the use of a resin counterpart. Some of the primary differences are listed below.

i. Weight - typical clay brick slips would weigh in the region of 30 kg/m² (not including the adhesive and pointing mortar). That's a lot of weight to hang on a background of

insulation, albeit with a reinforcing coat that is pinned through the mesh. Sto-Resin Brick Slips on the other hand weigh approximately 6.8 kg/m², so almost a fifth of the weight. Both solutions rely on an adhesive bond to support that weight.

ii. Flexibility - Sto-Resin Brick slips have an inherent flexibility, which reduces the stress and subsequent bond failure that could occur from structural or thermal movements of the substrate. Rigid solutions such as clay brick slips are far less capable of dealing with such movement, the result being that the stresses created could 'pop' the slip. This is particularly relevant where the brick slip is bonded to external wall insulation. In such a circumstance, any heat on the surface of the façade (solar gain) cannot be dissipated through to the structural wall due to the thermal insulation layer. All of the heat is retained in the surface finishes, which in some cases in direct sun light can reach 800C or more. Temperature fluctuations of such magnitude will cause thermal expansion and contraction movements.

iii. Panel sizes - where clay brick slips are adhered onto EWI systems, the panel dimensions are restricted due to the difference in thermal movement between the clay brick slips and the underlying render and insulation. Therefore, it is necessary to incorporate movement joints at regular intervals (typically no greater than 6.0 m) to prevent an accumulation of thermal movement and subsequent failure of the adhesive bond. This introduces an additional weakness into the facade as it creates joints that must be sealed, and those seals must be maintained. Facades with resin brick slips on the other hand, being flexible, do not require any additional movement joints, are totally compatible with the underlying render coat, and so there are less weaknesses in the outer envelope and a reduced (and often eliminated) requirement for periodic sealant maintenance / replacement.

iv. Impact resistance - as they are more flexible, StoTherm systems with resin brick slips provide greater impact resistance than EWI systems with clay brick slips. This may sound counter-intuitive as the clay brick slips would be harder than the resin brick slips. However, they are being installed on a compressible background (insulation), and so under impact, the resin brick slips can flex as the insulation is compressed and absorbs the impact, whereas being rigid and brittle, the clay brick slips would simply crack under the same type of impact, and once cracked, the adhesive bond could be compromised with the consequence being that the bricks in the area of impact could be loosened and subsequently fall off.

v. Porosity & frost resistance - The majority of clay brick slips are porous. Resin brick slips are much less so, with a liquid water permeability of <0.01 kg/m² h0.5 (class 3) when measured in accordance with BS EN 1062-3: 2008. Therefore, clay brick slips on a cold facade (i.e. with insulation directly behind) would be significantly more prone to water absorption and subsequent frost attack than would the resin brick slips. This particular performance characteristic is a major consideration for certification bodies and the resin brick slip is fairly unique in that it has been accepted and certificated as a façade cladding on EWI, whereas we are not aware that many, if any, clay brick slips have been able to attain this approval, principally because of concerns relating to water absorption of such a product.

We understand that further concerns relate to the durability and longevity of the resin brick slip system and specifically it's weathering characteristics. Whilst nobody can say with certainty how the façade will weather after 20 – 30 years, as it will depend on many factors, not least of which will be the local environment, neither is there any certainty that a clay brick

slip will exactly match the existing bricks. Contrary to the opinion that the resin brick slip will be unable to “replicate the texture, colour, patina, character and appearance of brick”, on many, many projects we have been able to do just that. We believe that the sample produced for this project is a good match to the brickwork and that the ability to match and fine tune the appearance is more achievable with the resin brick slip more so than a fired clay brick slip.

We have examples of previous projects that reflect our experience of 30 years where the resin brick slips have been used successfully and continue to perform both functionally and aesthetically. Photographs from some of those projects (with dates to show age) are attached as addendum A. The product also has to go through rigorous independent testing in order to gain a European Technical Approval. One of the most demanding is the EOTA wall test where a panel of the system build up is subjected to a sustained mix of water spray and heat/cold to simulate actual weathering conditions. This accelerated weathering test is to demonstrate the fitness for purpose under the loading that the façade will receive in service and is a measure of the durability and weathering performance of the product. Our BBA certificate 95/3132 PS6 also recognises the durability of the system and with 5 yearly maintenance inspections gives a minimum expected life of 60 years. Lastly, we have installed over 1.5 million m² of the product worldwide without problem.

We do not believe that modern construction products are at odds with traditional buildings or those within conservation areas. In many cases, such uses of modern solutions can enhance both the appearance and performance of that asset.

I give you my thoughts based on nearly 30 years' experience in this industry. In that time I have worked for the two largest companies in the industry, having previously been with Weber (St Gobain). I have been a past Chair of the Insulated Render and Cladding technical committee (INCA) and I am the current Chair of the technical committee for the National Insulation Association (NIA). I also have provided expert witness on the use of render.

We feel that there is a strong case for the use of the lighter, more flexible, more compatible resin brick slip and therefore we would urge you to reconsider the use of the Sto Resin Brick Slip solution for this project. We would welcome your further thoughts on this matter and of course would be happy to answer any other questions you may have.

Yours faithfully

Gary Bundy

Technical Director

Bsc Hons

6th December 2016