**Commercial Building Conversion Including Rooftop Extension** 

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## **Queens Moat House, Romford**

Size:	3245m <sup>2</sup> arranged over six storeys
Value:	£4.5m estimated
Status:	Completed
Type:	Commercial development

## The structural design reduced the budget by £125,000 and saved approximately 115 metric tons of embodied carbon emissions

The project entailed the refurbishment of a five-story existing commercial building to 41 residential units. The proposed works comprised of building a new storey and the refurbishment and conversion of the existing building from commercial use to residential.

We provided a structural design for the additional storey, structural appraisal of the existing building, design of alterations to the existing structure and below ground drainage design.

The new extension on the top of the building is built from load bearing timber stud walls and the new flat roof consisting of timber joists spanning onto composite timber and steel beams.





The loading from the additional story is spread over the existing concrete floor structure via composite timber and steel beams in order to avoid the need to strengthen the existing structure.

Taking the time to investigate and analyse the existing structure enabled us to justify the existing roof structure's capacity to support the proposed additional storey, saving the client substantial construction costs. This was achieved by obtaining the original structural design information and analysing the existing elements that were to experience an increase in loading due the proposed works.

When the project was completed we carried out an analysis of the embodied carbon required to create the structure of the additional storey. This was compared to a typical design solution another engineer may employ for this type of work.

This study illustrated the substantial savings we were able to provide to the client.





