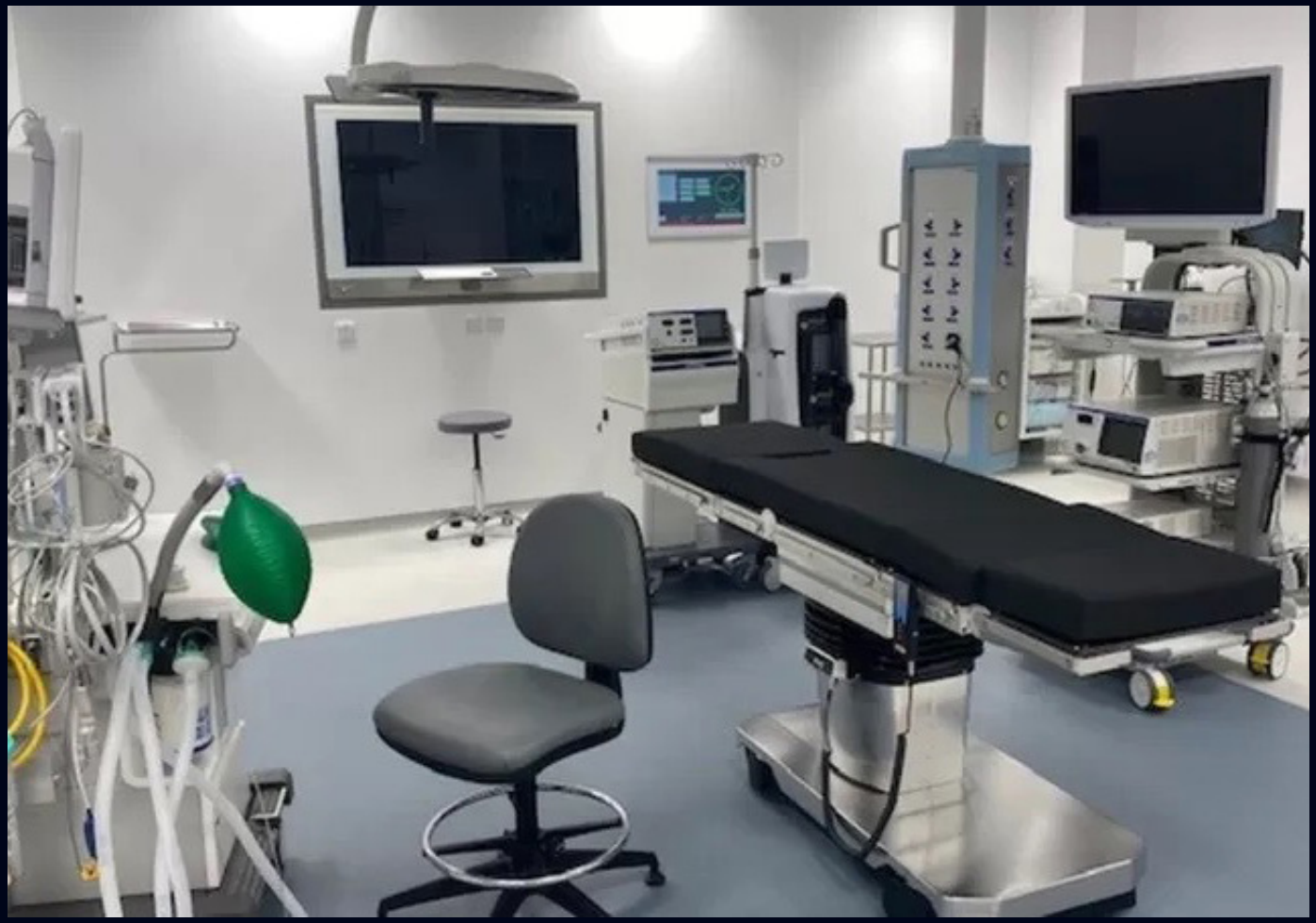
PORTLAND CONSULTING ENGINEERS

ROYAL VICTORIA INFIRMARY



Client: Newcastle-upon-Tyne NHS Foundation Hospitals Trust

Project Value: £1 million

Project Details: Vertical extension to add an additional storey to house plant and refurbishment of four operating theatres.

To provide services from RIBA Stage 4 to enable the construction of the additional storey to house extensive mechanical and ventilation equipment and to develop details for the structural modifications of four operating theatres to accommodate the new ventilation plant and support the new theatre equipment.

Portland were commissioned directly by the contractor based on our previous experience and commercial approach. The wing was located in the centre of the hospital campus, which itself is in a city centre location. The initial standout requirement was 'buildability'. To aid this, changes were made to the Stage 3 design based on our evaluation of the location and the logistical challenges posed by that.

The initial phase of the project comprised the construction of an additional storey on top of the seventh floor of the existing hospital wing. Available space to position a crane was restricted to a single location so as not to conflict with the undertakings of the hospital, therefore the steel had to be designed to suit the capacity of the crane at full reach. In conjunction with the Contractor and the fabricator we devised a two-stage erection process that allowed the elevated mezzanine plant support deck of the plant room to be installed in advance of the main superstructure.

An extensive structural survey of the existing 1960s reinforced concrete building was required in advance of the main design to ascertain the suitable support points for the new structure and also to prove the fire resistance of the existing roof structure. Detailed coordination with the hospital was necessary at their stage to arrange access to what was a live environment.

Portland also provided temporary works design services, the most challenging of which was to prove the ground where the crane would stand. Only one location could provide adequate space and this was congested with underground services. We therefore devised a testing regime and designed crane mats with sufficient rigidly to spread the load over the services, in particular the drainage

The further phases of the project moved to the refurbishments of the operating theatres. This was done in a sequential manner to limit the capacity taken out of the system at any one time. This was also supplemented by the new theatres at the Day Treatment Centre which we had previously been involved in.

Our role involved the forming of new apertures in the roof to allow the passage of ventilation ducts from the new plant room above and modifications to the structure to support the new theatre equipment. Extensive analysis was required in to ensure that structural movement and deflections were limited and did not exceed the tight limits required.

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