

NORLAND

MANAGED SERVICES

Maintenance • Mechanical Services • Electrical Services

Water Treatment • Energy Management

Project Management

RECEIVED
20 MAR 2007

IT Server Room Project

Creation of a new dedicated IS plant room.

The IT Server room is located in Basement room B/1/055 located on the East side of the museum. This room contains the majority of the British Museums IT servers, networking Hubs and ancillaries and consequently is a strategic and highly important part of the Museums operations.

The existing room is currently cooled by two 20KW water cooled Air handling Units located in the room. Air is drawn in at low level and the cold air is ducted out of the top of these units which then generally cool the space. The individual server racks draw this air in using internal fans.

The operation of the server room and subsequent operation of the museums, IT network, website, Intranet, ticketing and cash handling systems has been compromised recently on a number of occasions by water leaking onto the floor. This has been as a direct consequence of the water-cooling systems installed in the IS server room. In addition, during last summer, the existing cooling systems were operating at maximum demand, and failed repeatedly causing IT system shutdown and failure due to overheating. The presence of water on the floor has caused serious Health & safety Issues for IS staff & Engineers

Scope of Works General

To relocate & reinstall two No existing 20kw Air Handling Units (AHUs) from IT server room (B/1/058). Together with the supply and installation of 2 No new 20kw Air Handling Units (Airedale model 22X2-EZ) in the newly created plant room area (*Old Security Uniform store B/1/055*) including supply installation commission of both mechanical and electrical services required in order to maintain the space conditions required.

All works are to be interfaced and incorporated into the existing local control cabinet to enable full control of the space condition.

The existing chilled water supply would be utilised for 2 No existing Air Handling Units with the proposed 2 No new units being of a DX type with their associated condensers being located outside (on top of Substation B behind existing Acoustic Panels).

The air service would be ducted through the wall into server room at low level and under the newly raised floor and directed through openings into both the bottom of the server racks / floor tile grilles. Space air would be drawn back through high-level vents into the plant, re-circulated, and conditioned accordingly.

The existing supply & extract system in the new plant room will be utilised for air changes and ventilation.

The IT control room (anti room) would also be served from these Air Handling Units.

Both existing UPS units would also be relocated to new room to provide additional space for IT expansion.

The mains supplies to UPS units are fed from Site maintained electrical supply.

New electrical supplies required for the additional Air Handling Units together with local supplies will be installed. (Note the new AHU and the existing AHU electrical supplies will not be on the maintained emergency electrical supply).

The new plant room will be decorated together with new lighting and small power as required. The existing Fire suppression system will need to be removed /modified to allow removal of the existing AHUs.

Benefits

The benefits that will be enjoyed by carrying out these works are: -

1. The integrity of the room and subsequent reliability of the IT service will not be compromised by the hydraulic systems that are there to keep them cool.
2. The resultant space saving by removing the plant will give current IT server room more space for expansion.
3. Additional cooling capacity will be provided for the existing and Future expansion

Scope of Building Works requiring consent

A series of high and low level ventilation slots are to be cut through the basement wall dividing rooms B/1/055 and B/1/058.

The curious line and modern construction of the wall in question would indicate that it is not part of the historic structure of the building but a later (service) adaptation.

That said, it is quite possible that over the years the surrounding construction has bedded itself around the wall such that it could now be considered as secondary structure.

Back analysis suggests that the level of loading currently in the wall is such that if the ventilation slots were to be cut as planned the remainder of the walling would not be able to support the construction over.

Accordingly, it is proposed to strengthen these elements using the following techniques;

The piers left between the low level slots.

(See Hockley & Dawson Drawing 14642 301)

The limiting parameters set by the maximum height of the raised computer floor and the minimum area of the required slots effectively means that the only 'space' left for structure is that of the 330mm wide piers shown. There is no scope for the insertion of steel 'picture' frames to improve the loading capacity of the construction. Accordingly, if the size of the piers and the applied loading is fixed the required strength of the masonry can be established mathematically by dividing the applied load by the area available.

However the strength of the existing bricks (probably) laid in lime mortar falls far short of the loading capacity required, and so the introduction of the stronger brickwork proposed is the only way forward.

The piers left between the high level slots.
(See Hockley & Dawson Drawing 14642 302)

With marginally less applied loading and the opportunity of using deeper apertures we do not have the same dimensional constraints that exist at low level.

Accordingly, we are able to minimise the adaptations required by introducing steel 'picture' frames around the openings. These frames replace the strength of the missing masonry and have been designed so that being introduced from each side of the wall the work can be undertaken in two phases and the amount of temporary propping minimised.

With regards to the fact that the museum is a Listed Building, these building works would be fully reversible (i.e. wall could be fully reinstated) in the future.

Summary

These works must be completed as a matter of urgency for the following reasons: -

Water leaks are creating serious Health & Safety Issues for Museum Staff

Water leaks are affecting the performance & reliability of the IT systems

With another hot summer predicted, additional cooling capacity and back up is required.

The Server room is already full of IT equipment, the additional space created will allow museum to operate IT services in this area for at least a further 5 years



Andy Johnson

Project Manager
Norland Managed services
07852 918980