

# *WRA Associates Ltd*

Building Engineering Services Consultants

## **PRELIMINARY REPORT**

**FOR THE**

**M&E WORKS ASSOCIATED WITH THE NEW  
DINING HALL AND BEDROOM SUITES**

**AT**

**ARENS BAR & GRILL AT SIX BELLS  
RUSLIP  
HA4 7TS**

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## REPORT ON ENGINEERING SERVICES FOR ARENS BAR AND GRILL

### PART ONE - PREAMBLE

#### 1.01 APPOINTMENT

WRA Associates were appointed to assess the provision of engineering services for a new large dining hall and bedroom block to be constructed at the existing Arens Bar and Grille at Six Bells Ducks Hill Road Ruislip HA4 7TS

#### 1.02 REASON FOR REPORT

To assess the extent of engineering services required for a new dining hall and bedroom areas all to the proposed layout as shown on initial layout drawings approved for/by planning

It is to be noted that restrictions on height, as the approved planning drawings, show a reduced total height of the building and which in turn impacts on the provision of engineering services and particularly the need for mechanical ventilation and the ability of such services to be accommodated within the reduced height proposed.

#### 1.03 ADDITIONAL INVESTIGATION

As part of the report, to investigate and report on the provision of existing main incoming supplies and energy services, heating and hot water, and their ability to cope with the additional energy demands.

#### 1.04 PLANNING DRAWINGS

Investigation and report based on drawings numbers VSA20/11 – 007 and VSA200/11 – 008, both of which form part of the approved planning documentation.

## REPORT ON ENGINEERING SERVICES FOR ARENS BAR AND GRILL

### PART TWO – FINDINGS AND RECOMENDATIONS

#### **2.01 MAIN UTILITIES**

##### Gas

A single gas main enters the site and terminates at meter , size U16, and capacity of which is 172 kW. The meter is located externally and with a timber housing all situated at the boundary.

From survey carried out gas loading is assessed as follows:-

- Heating and hot water via a single gas fired boiler, this on the first floor over the bar area, output rating of 60kW
- Kitchen gas appliances, total connected load in the region of 116kW.

Total of above is therefor in the region of 167kW

The existing gas meter, and possibly the incoming service, is at about capacity.

With the provision of new heating and hot water plant, this to cover the increased dining and bedroom use, this will increase gas consumption and requiring an upgrade of existing supply. On this basis the gas service and meter should be upgraded to U25 – 269kW.

If the existing boiler is subsequently found to have a gas load in excess of 30kW or if the client desires some flexibility for future kitchen upgrades we would suggest a U40 meter be installed which gives significant scope for future additions.

##### Water

A single 28mm diameter cold water main enters into the basement cellar off/from an external meter in the footpath.

The existing water main shall be extended to the service yard new block and shall extend to feed a proposed 800 litre cold water storage tank and associated booster set. No upgrade is required.

We assume the existing supply is not a historic lead service. If it is we would suggest this be replaced during the works.

##### Electricity

Existing electrical supply is 400 volt 3 phase service, and which service connects to a polyphase meter and associated switchgear, all located in the cellar at basement level. The cellar being used as a stock room for wines, beers and spirits. Also located in the cellar being a number of chiller plants.

The incoming main terminates in cut outs (fuses) these rated at 100 Ampere which equates to a supply rating/capacity of 63kW. From the cut outs the supply extends to a polyphase meter, capacity rating of 20 to 125 Amperes.

From preliminary survey, the total connected load as existing is in the order of 130kW. As not all items or appliances will be on at the same time, likely demand will be in the order of 65kW.

# REPORT ON ENGINEERING SERVICES FOR ARENS BAR AND GRILL

## PART TWO – FINDINGS AND RECOMMENDATIONS

### **2.01 MAIN UTILITIES (cont)**

#### Electricity (cont)

Preliminary assessment of electrical loading for the new building, lighting, small power and mechanical plant, gives a total connected load of 27.5kW. As the bulk of this is for mechanical plant the anticipated additional load will be in the order of 20kW

In view of the above it is unlikely that the existing incoming supply will be able to cope with the additional load and a new larger supply/service will be needed.

Notwithstanding the above, concern is raised regarding the current (un)safe location of the existing main meter and associated switchgear, in that not only is the switch gear not enclosed but that physical safe access to same is very difficult, neither of which comply with Regulations or British Standards. In addition to the foregoing, if application for a new supply is required it is possible that the supply authority will refuse to provide a new service.

### **2.02 VENTILATION**

For the number of diners as shown on the drawing, 146 persons, the amount of ventilation required, would result in ductwork in the order of 400mm and associated ceiling mounted room units, approximate depth of 600mm. Given the limited headroom and need to 'hide services, mechanical ventilation of the dining hall is impractical. Therefore natural ventilation via opening windows is the only practical solution albeit there is no guarantee that such natural ventilation will be sufficient to maintain comfortable conditions.

Bedroom suites will generally be ventilated via openable rooflights. Associated bathrooms via ceiling mounted extract fans operated by bathroom lighting.

### **2.03 HEATING & COOLING**

The existing gas boiler should be retained to serve the existing parts of the building, but does not have sufficient capacity to extend to the new area. Therefore primary energy for additional heating and hot water will require provision of new gas fired boiler plant. For location see drawing.

Given the number of occupants/diners, it is recommended that heating, and cooling, to the newly formed space to be via a system VRF (air conditioning) units. It is proposed that 4 way blow ceiling cassettes be installed to the ceiling of the dining hall, these having a depth of 300mm, and wall mounted units to the bedrooms.

It is to be noted that wall space for heating/cooling units is somewhat limited.

The minimum void clearance for installation of the dining room units is 250mm. The units in the bedrooms will be exposed but are available in white (other colours also available)

Bathrooms to be provided with electric towel rails.

Common circulation areas to be supplied with a small electric panel radiator for background heating.

VRF package to be complete with MELCOTEL 2 hotel interface and AE200 centralised controller for control, together with individual room controllers.

# REPORT ON ENGINEERING SERVICES FOR ARENS BAR AND GRILL

## PART TWO – FINDINGS AND RECOMMENDATIONS

### **2.03 HEATING & COOLING (cont)**

External units to be located in a new external compound. The requirement for any acoustic enclosure will be reviewed at design stage.

### **2.04 HOT AND COLD WATER**

The existing provision of hot water appears somewhat short of what would be expected to cater to this number of meals. With the addition of the bedrooms above the existing plant is definitely insufficient for the new areas.

It is proposed that hot & cold water to the new bedroom suites and the recently enlarged kitchen shall be via the new plantroom, see drawing for detail.

The hot water shall be provided by 2no gas fired water heaters complete with top to bottom recirculation kits and a hot water return circuit.

Cold water supplied by a packaged cold water storage tank and booster set to allow for a steady flow and pressure to serve the new outlets.

All pipework to the plantroom shall be pre insulated and run in a dedicated pipework trench.

### **2.05 ABOVE GROUND DRAINAGE**

New above ground drainage from the first floor bedrooms will be run in the ground floor ceiling void and adjacent to the steel beams where it will offset and fall to the perimeter where new below ground drainage connections can be formed to carry the drainage away.

Note that to allow for sufficient drainage fall the ground floor ceiling void space required will be 315mm. This is due to having to run the pipes further to minimise beam penetrations.

### **2.06 ADDITIONAL CONCERNS**

Open staircase – This requires review by a fire consultant. The staircase appears to be open from the ground floor may require additional protection and smoke clearance.

We assume the existing kitchen extraction directs air away from the new building suitably and does not risk introducing contaminated air back to the bedrooms or dining block i.e. smells.