To: Residents of Flats 101 – 141 as per Planning Application Consultation

**Boiler Replacement – Planning Application 2016/4401/P**

***Response to Planning Concerns***

**1. Introduction**

This note has been produced in response to the comments received from residents via the Camden planning application site or by direct emails to the Cholmley Gardens management.

The information below has been supplied by MA Consulting Engineers who are the engineering consultants to the project, and has been authored by:

Mark Auty Design Consultant of 30 years’ experience, MCIBSE, IEng

Paul Stokes Boiler and Flue sales manager of 15 years’ experience

Craig Phillips Flue specialist design engineer of 30 years’ experience.

Minor editing has been carried out by Tony Penfold, Cholmley Gardens Ltd

**2. Planning Concerns**

The concerns raised by the residents although voiced separately fall into 4 categories. These being

1. Noise and vibration from the new flue
2. Heat transfer from the new flue into the property
3. Emission of gases from the new flue termination
4. Clean Air Act compliance

We will deal with each issue separately however there are some general points which need to be highlighted prior to going into the details of each concern.

**3. General comments on the proposed new boiler system**

**3.1 Boiler and burner noise levels**

The new boilers will be significantly quieter than the existing boilers were. At present the only active boiler is for the domestic hot water and there is only one burner operating. Sound measurements on the roof and adjacent to the plant room measure the sound level from this single burner at around 75dBA.

The domestic hot water service (HWS) boilers currently installed have what are known as “pressure jet” burners on them. These burners are single stage on/off burners and are notoriously noisy. There are also highly inefficient and are an old technology which is no longer used today.

The heating boilers also have pressure jet burners on them and having previously been in the boiler room when the boilers and water heaters were all firing we have witnessed the noise that used to be generated by all of the plant. If we had known the opposition which was likely to arise we would have taken noise readings at that time, however we can estimate the sound level produced with all 6 burners operating. The rule of thumb is that if you double the noise production the sound level increases by 3dBA. We can estimate then that the sound inside the old boiler room with all the old boilers working would be around 82dBA.

The new boilers are all condensing boilers with fully modulating burners. The burners are integral to the boilers rather than as with the pressure jet burners which are fixed to the front of the boiler and exposed on all sides with no sound insulation. The new boilers will ramp up and down in output as required by the heat demand of the system and at peak output each will produce a sound level of 68dBA at 1 metre. This is data provided by the boiler manufacturer and is tested to the relevant British standard. The system is designed so that only 2 of the boilers will be required to run at full capacity at any one time, and by using the previous rule the maximum sound from the boilers inside the boiler room will be 71dBA, some 11dBA quieter than the existing system, a significant change.

In truth the sound heard from the new boilers will be much less than currently experienced on the site and there will be no sudden increases as heard when the on/off burners operate and it is our considered opinion that the whole site will experience a much calmer and quieter environment in the months following changeover.

**3.2 Flue Gas Temperature**

The new boilers are what are known as “condensing” boilers. The heat transfer from the hot gases to the water-ways is highly efficient and as a result of this the flue gases are much cooler than the existing gases emanating from the old boilers.

**3.3 Change of boiler room layout**

The existing flue onto the boiler room roof will no longer be operating. The new boilers will all be sited in the lower part of the plant room and the doorway between the lower boiler room and the space currently housing the HWS boiler will be blocked up, thereby containing the noise produced by the new boilers in the area away from the residents’ accommodation.

**4. Specific Concerns**

**4.1 Noise and Vibration from the new flue**

There will be no vibration from the new flue. There will be very little, if any sound from the new flue. The flue is insulated to prevent heat loss from the flue, as stated previously the flue gases are cooler and they need to be kept as hot as possible to ensure buoyancy and velocity up the flue. The flues are insulated to prevent freezing of the water vapour contained within the flue gases in extremely cold weather. Flue gasses will be nominally around 70degC at the boiler outlet and will cool as they pass through the flue system.

The insulation although present for heat loss reasons will also act as a sound barrier. Any noise which is transmitted up the internal flue liner will be prevented from break out by the insulation.

There will be no frequent increases of noise or loud bangs as suggested in one of the correspondence to the planners. The boilers modulate and are extremely quiet when increasing and decreasing output.

**4.2 Heat transfer from the new flue**

The new flue will not emit any significant heat. Flues in the boiler room will be warm to the touch but not scalding. The external flue will have an external temperature of around 40degC and the flue will stand away from the wall preventing any possible heat transfer by conduction. Heat transfer into any property will therefore not be an issue.

**4.3 Emissions from the new flues**

The old pressure jet burners are inefficient and produce high levels of Nitrous Oxides. The emissions from the existing burners from evidence available is <170mg/kWh (milligrams per kilowatt hour). With the 2 HWS boiler burners operating and 3 of the 4 heating boilers operating the NOx emissions could be as high as 850mg/kWh.

The new boilers each have a NOx emission rate of 32mg/kWh, and with 2 boilers operating at peak design load this would equate to 62mg/kWh, a significant decrease in NOx emissions.

The flue gases from the new system are therefore much less poisonous and much less environmentally damaging than those from the existing boilers.

The flue gas temperature however is low and this will cause the water vapour contained within the flue gases to condense out in cooler weather. This will produce an effect known as “pluming”. The water vapour will become visible as a white mist and will be seen drifting in the direction of the wind from the flue termination.

It should be noted that the flue gases that are currently being emitted by the boilers and water heaters contain water vapour, carbon dioxide and nitrous oxides in higher quantities than the new boilers. As stated previously the new boilers are far less damaging to the environment. Pluming of the flue gases however cannot be avoided with the new boilers, but was not an issue previously as a result of the very poor efficiency of the existing boilers.

**4.4 Clean Air Act compliance.**

We would like, as a team, to reassure all of the residents that the Clean Air Act will be complied with to the letter. As professional engineers, suppliers and installers we have a responsibility and a duty to comply with all of the relevant regulations and legislation relating to our respective trades, including the Clean Air Act, Gas regulations, Water regulations etc. Our designs and installations will stand up to the scrutiny of any suitably qualified independent consulting firm or arbitrator.

In essence we are not allowed to do anything other than comply with the law.

**5. Summary**

We sincerely hope that this brief report has served to allay some of the fears voiced by the Residents.

We would appreciate any following questions from the residents about this submission or relating to any other issues on the project to be forwarded to us so as we can continue to maintain the peace of mind of the residents through this installation process.

This type of boiler replacement happens once every 30 or so years.

MA Consulting Engineers design high quality plant rooms which will serve the community for many years to come. And with regular maintenance to the plant as required by the plant manufacturers and controls engineers there is no reason why the plant we are installing now cannot continue to operate for another 20 to 30 years.

MA Consulting Engineers have been involved with over 20 boiler room replacements in the last 3 to 4 years and every single one has gone ahead without hitch or complaint. All of the installations are excellent quality as we only recommend high quality installers and we only specify the best and most reliable equipment, including boilers, pumps and controls.

It should also be noted that the new plant and controls are significantly more efficient than the existing equipment, which should result in lower gas consumption by the site which should in turn result in cost savings to the residents. And for those concerned about the environment as a whole the emissions from the new plant are significantly reduced which will help the fight against Global Warming.