

Template Combined Heat and Power System Information Request Form

[Note to local authorities – this form is designed to be tailored for your use, and you should delete questions as appropriate depending on the level of information deemed necessary to make your assessment. See chapter 4 of the ‘Combined Heat and Power and Air Quality’ guidance document for more information, available at www.environmental-protection.org.uk/CHP. If a proposed CHP system will be fuelled by biomass then please use the version of this form produced for the EPUK guidance ‘Biomass and Air Quality’ available at www.environmental-protection.org.uk/biomass]

In common with other types of combustion appliances, Combined Heat and Power (CHP) systems are potentially a source of air pollution. Pollutants associated with CHP include and nitrogen oxides (NO_x), and can also include particulate matter (PM₁₀/PM_{2.5}) and sulphur dioxide (SO₂) depending on the fuel used. These pollutant emissions can have an impact on local air quality and affect human health. It is essential that any new CHP systems installed in *[insert local authority name]* meet certain emission control requirements in order to protect local air quality.

[insert if appropriate]

[A section of/ the whole of, delete as appropriate] [insert local authority name] has been declared an Air Quality Management Area for breaching the air quality standards for PM₁₀/ and / NO₂. A map is available on *[insert web address]*.

In order to approve a planning application associated with a CHP system, the following information below must be supplied to the local authority.

You may find the Carbon Trust publication ‘Introducing Combined Heat and Power’ a useful companion when completing this form. The publication can be downloaded from www.carbontrust.co.uk/publications/pages/publicationdetail.aspx?id=CTV044 (free registration required)

1. Development Details

a) Planning Application Reference	
b) Name of Site	
c) Address where CHP system(s) will be located	
d) Person completing form	
e) Contact telephone number	
f) Date	

2. Particulars of the CHP System

This information on the basic design of the system will help us assess the emissions performance. CHP systems often produce relatively high emissions when lightly loaded, hence the question regarding peaking plant and heat stores. The boiler manufacturer and/ or installer should be able to help you provide this information.

g) Describe the basic details of the CHP system, including the type of 'prime mover' (e.g. internal combustion engine, gas turbine, etc) and fuel to be used.	
h) Describe the CHP system in more detail including the make, model, manufacturer, thermal capacity (kW/MW) or electrical capacity (kW _e), efficiency and maximum rate of fuel consumption (m ³ /hr, kg/hr or l/hr).	
i) Describe the CHP combustion system	

j) Describe how combustion will be optimised and controlled to minimise emissions.

k) Provide details of any abatement equipment for controlling emissions.

l) How does the CHP system with variable heat loads – is it linked to a heat store or is peaking plant used? If peaking plant is used please provide as much detail as possible on the boiler(s) used (fuel type make, model, manufacturer, thermal capacity (kW/MW), efficiency and maximum rate of fuel consumption (m^3/hr or l/hr).

3. System Operation and Maintenance

System efficiency and emissions performance very much depend upon regular maintenance. Your installer should be able to recommend a suitable maintenance schedule.

m) Who will be responsible for operating and maintaining the CHP system?

n) Provide details of the maintenance schedule associated with CHP system, abatement equipment and stack. This should include frequency of system inspection and servicing by a trained engineer.

o) Describe how incidences of CHP or abatement system failure are identified & mitigated.

4.a. CHP System Stack Details

The design of the stack greatly affects how pollutants produced in a CHP system disperse over the surrounding area. Where the area is heavily built up, or has existing air quality issues, dispersion becomes more complicated and a computer modelling technique known as dispersion modelling may be required. Your installer should be able to provide most of the details and make a calculation on stack height and design. When dispersion modelling is required you or your installer may need to engage a specialist consultant.

p) Identify the height of the CHP system exhaust stack above ground. *The height should be calculated using dispersion modelling software such as ADMS 4 or Aermod [delete if dispersion modelling is not required]* Evidence shall be presented to demonstrate that predicted emission concentrations associated with the calculated stack height do not have a significant impact on the air quality objectives for NO₂ and PM₁₀.

4.b. Dispersion Modelling

q) Air quality modelling shall be carried out in accordance with the procedures outlined in [EPUK's 'Development Control: Planning for Air Quality'](#), [[London Councils \(2007\)](#)] and [Defra Technical Guidance Note LAQM.TG\(09\)](#)[, and with due regard to the [Mayor's Air Quality Strategy for London](#)].

The modelling work shall take into account variable emissions rates associated with the combustion plant operating on full and partial load, and start-up/shut-down cycles.

The results of the modelling should be presented in a report that covers the following areas:

- Details of the modelling software chosen;
- Stack internal diameter (m);
- Does the stack terminate vertically and is the stack insulated;
- Present maximum nitrogen oxides emission rates (mg/m³ or g/hr) at standard reference conditions (6% oxygen, 273K, 101.3kPa). Provide emissions test data as evidence of emissions rates from the boiler. This shall reference the test method used to determine emission concentrations;
- Identify the exhaust gas efflux velocity (m/s) and temperature (°C);
- Is the CHP exhaust stack fitted with draft fans with adjustable speed control?

- Grid reference of CHP exhaust stack;
- Release and stack parameters used in the modelling exercise e.g. volumetric flow-rate (V), pollutant emission rates (g/s);
- Nearby buildings details;
- Meteorological data;
- Terrain and surface roughness;
- Background levels of pollutants;
- Methods used to combine background and source-contributed pollutant concentrations.

The predicted results of ambient pollutant concentrations at specific receptors should be tabulated. This should include location of the receptor and distance from the stack. The location and OS grid reference for locations of maximum impact should also be identified.

A full discussion of any potential breaches of air quality objectives should be provided. This should also include a discussion of model sensitivity to key input parameters.

6. Building Details

The height and distance of neighbouring buildings will determine their exposure to emissions from the CHP system, and therefore the height of the stack needed. Your architect should be able to provide this information.

r) Record the distance of adjacent buildings from the CHP exhaust stack.

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s) Record the height of adjacent buildings from the CHP exhaust stack.

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t) Record the dimensions of building to which the CHP exhaust stack is attached.

u) Indicate the distance from the CHP exhaust stack to the nearest fan assisted intakes, air vents, roofs with access or terraces, balconies and openable windows.

7. Plans

Please attach a site plan to this form showing the following:

- a) The position of the CHP plant room, exhaust stack, and (if applicable) fuel storage area and the access and exit routes for fuel delivery vehicles.
- b) the position of the exhaust stack, fan assisted intakes, air vents, roofs with access/terraces, balconies and nearest openable windows.

8. Returning this form

Please return this form to:

[insert name]

[insert contact details]

[This form was prepared as part of the Environmental Protection UK project 'CHP and Air Quality Guidance for Local Authorities' project in June 2011, and was adapted from a form developed by the London Borough of Camden.]

Further guidance documents and tools are available to download from www.environmental-protection.org.uk/CHP or contact Environmental Protection UK, 44 Grand Parade, Brighton BN2 9QA.]