CHP TOOL

You can record details of your CHP Here:	**Volter 40 Indoor**
Additional comments:	

CHP AQ Tool v1.3

This tool is in 4 Sections. Please complete each section as required by entering information in the yellow cells.
Yellow cells will appear as you make your selections.
If you wish to change your selections part way through, it is recommended you clear the contents from yellow cells manually as only yellow cells are used in the calculations.
You can also click the Clear AQ Tool Button on the right (you must have macros enabled - see Info on Macros)

Info on Macros:
This tool used Macros to clear cells but they are not required for calculations. Macros may have been automatically disabled and will need to be enabled to use the Clear buttons. Please contact your IT deparment or use the Help functions.

Section 1

		Help Column
Select CHP Technology	Gas Engine	Select Type of CHP from Drop Down Menu. Gas Engine is same as Internal Combustion Engine
Select Engine Type	Spark Ignition	
Select Fuel Type	Biogas	
Select to specify ELV or use assumptions based on Power Output Range of Gas Engine CHP (kWe)	70-1500	Select from Drop down list. If compliance with an ELV can be guaranteed, inputting the ELV will ensure the most reliable result. If no ELV is available, impact will be estimated based on the review of UK CHP emissions
Please Enter the Power Output of your CHP (kWe)	140	Enter a number from 70 to 1500
	Please skip Section 2 and go to Section 4 Impact Calculator Below	

Your Notes:

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Section 2

For users wishing to input installation specific information on Exhaust flow-rate and/or NOx in-stack concentrations.

Please complete the yellow cells as they appear based on your choices.

Please select which data you wish to provide		

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Section 3: Determination of Emissions factors and Emissions based on Section 1 or 2

Based on sections 1 or 2, the following are calculated for the CHP

			Your Notes:
NOx Emission Factor (grams/kWh)	7.5	This is a conservative value, based on the upper range of emission factors identified from a review of the prevalent CHP installations in the UK	
NOx Emission Rate (grams/second/kWe Output)	0.00208	This is a conservative value, based on the upper range of emission factors identified from a review of the prevalent CHP installations in the UK	
NOx Emission Rate (g/sec)	0.29	Defaults based on UK generic emissions for CHP installations	
Annual Emissions NOx (tonnes/year)	9.20	Defaults based on UK generic emissions for CHP installations	
	Please go to Section 4 Air Quality Impacts Calculator.		

Section 4: Air Quality Impacts Calculator

This calculator is based on LAQM.TG(09) Industrial Nomograms for NO_2. The CHP screening tool calculates only with the annual mean NO_2 impact, and is based on the relevant nomograms for industrial sources in LAQM.TG(09) – Figures 5.2 and 5.3 - which in turn are based on ADMS2 dispersion modelling runs for both tall stacks and near-ground level releases (i.e. when a nearby building renders the effective stack height as less than 10 m). The result of the Excel-based spreadsheet is the maximum, annual mean ground level NO_2 concentration; therefore, re-iterative runs of the tool would be necessary to derive a minimum permissible stack height to achieve a given ground level NO_2 concentration.

Please complete the yellow cells as they appear based on your choices.

If you wish to change your selections part way through, it is recommended you clear the contents from yellow cells manually as only yellow cells are used in the calculations. You can also click the Clear Impacts tool on the right . (you must have macros enabled - see Note: Info on Macros)

Enter Stack Height (m)	5.2	If your stack height is more than 10m you may enter building information below. If your stack height is =<10m (i.e.Ground Level/Fugitive) then building height is not applicable.	
Calculated Effective Stack Height (m). This method for calculating the effective stack height is consistent with that as set out in LAQM.TG(09)	No buildings assumed as initial stack height 10m or less		
	A short stack/ground level source will be assumed by impacts calculator.		
You have entered a ground level or low stack height. Therefore you need to enter the distance to the nearest receptor (m)	87	Enter the distance to nearest receptor between 1 and 200m	

Results

CHP Tonnes NOx per Annum (based on Sections 1,2 or 3)	9.20	The tool includes all the assumptions/limitations inherent in LAQM.TG(09) i.e. a 10 – 25 m/s efflux velocity
Estimated Maximum Annual Mean NO_2 Contribution from CHP (ug/m^3), or Contribution from CHP at nearest receptor (ug/m3) for short stacks	**5.32**	The CHP screening tool does not take account of background NO_2 level; it calculates only the contribution of the stack to the maximum NO_2 annual mean concentration at the worst-case location. This locations will be different for varying stack heights and diameters.

The result from this tool is conservative, and errs on the side of caution. Only ground level impacts are considered. It is likely that the application of a detailed dispersion model using installation-specific values for exit velocity, volumetric flow-rate and flue gas temperature, and local meteorological data, would give a lower result.