Part B Variation form

Application for a variation of permit conditions

Local Authority Pollution Prevention and Control
Pollution Prevention and Control Act, 1999
Environmental Permitting (England and Wales) Regulations 2007

Introduction

When to use this form
This environmental permitting regime is known as and referred to as Local Authority Pollution Prevention and Control ('LAPPC'). Installations permitted under this regime are known as Part 'B' installations. Use this form if you already have a permit and wish to vary the permit conditions or wish to make a change to your installation.

Before you start to fill in this form
You are strongly advised to read relevant parts of the Defra general guidance manual issued for LA-IPPC and LAPPC, republished in 2008 and available at http://www.defra.gov.uk/environment/ppc/localauth/pubs/guidance/manuals.htm. This contains a list of other documents you may need to refer to when you are preparing your application, and explains some of the technical terms used. You will also need to read the relevant Process Guidance note. The EP Regulations can be obtained from The Office of Public Sector Information, or viewed on their website at http://www.opsi.gov.uk/legislation/about_legislation.htm.

Which parts of the form to fill in
You should fill in as much of this form as possible. The appropriate fee must be enclosed with the variation application to enable it to be processed further. When complete return to:

Insert local authority address

Other documents you may need to submit
There are number of other documents you may need to send us with your variation application. Each time a request for a document is made in the form you will need to record a document reference number for the document or documents that you are submitting in the space provided on the form for this purpose. Please also mark the document(s) clearly with your permit reference number and the name of the installation.

Using continuation sheets
In the case of the questions on the form itself, please use a continuation sheet if you need extra space; but please indicate clearly on the form that you have done so by stating a document reference number for that continuation sheet. Please also mark the continuation sheet itself clearly with the information referred to above.

Copies - *not relevant for e-applications*
Please send the original and [ ] copies of the form and all other supporting material, to assist the Authority in conducting any necessary consultation process.

If you need help and advice
We have made the form as straightforward as possible, but please get in touch with us at the local authority address given above if you need any advice on how to set out the information we need.

A1 Applicant details

A1.1 Name of the installation

ANCIENT HOUSE PRESS PLC

A1.2 Please give the address of the site of the installation

8, WHITTLE ROAD, HADLEIGH ROAD INDUSTRIAL ESTATE, IPSWICH

Postcode IP2 0HA Telephone 01473 232777

A1.3 Permit reference number

6.4/RJD/4/05

A2.1 The Operator – Please provide the full name of company or corporate body

ANCIENT HOUSE PRESS PLC

Trading/business name (if different)

Registered Office address

UNIT R HADLEIGH ROAD INDUSTRIAL ESTATE IPSWICH

Postcode: IP2 0HA.

Principal Office address (if different)

Postcode:

Company registration number

00410453

A3.1 Who can we contact about your application?

It will help to have someone who we can contact directly with any questions about your application. The person you name should have the authority to act on behalf of the operator - This can be an agent or consultant.

Name EDWIN MAYHEW

Position DIRECTOR.

Address 8 Whittle Road (As Above)

Postcode

Telephone number 01473 232777

Fax number 01473 280448

email address emayhew@ancienthouse.co.uk.

B1 About the installation

Please fill in the table below with details of all the current activities and proposed activities at the whole installation.

In **Column 1, Box A,** ***Activities in the stationary technical unit***
Please identify all activities listed in Schedule 1 to the EP Regulations that are carried out in the stationary technical unit of the installation.

In **Column 1, Box A(i),** ***Proposed new activities in the stationary technical unit***
Please identify all activities listed in Schedule 1 to the EP Regulations that are proposed to be carried out in the stationary technical unit of the installation.

In **Column 1, Box B,** ***Directly associated activities***
Please identify any directly associated activities that are carried out on the same site which:

* have a technical connection with the activities in the stationary technical unit
* could have an effect on pollution.

In **Column 1, Box B(i),** ***Directly associated activities***
Please identify any directly associated activities that are proposed, to be carried out on the same site which:

* have a technical connection with the activities in the stationary technical unit
* could have an effect on pollution

In **Column 2, Both Boxes A and B**, please quote the Chapter number, Section number, then paragraph and sub-paragraph number as shown in Part 2 of Schedule 1 to the EP Regulations [For example, *Manufacturing glass and glass fibre where the use of lead or any lead compound is involved*, would be listed as Chapter 3, Section 3.3, Part B(b)].

B1.1 Installation table for variation of permit conditions

COLUMN 1	COLUMN 2
Box A Activities in the Stationary Technical Unit	Section in Schedule 1 of the EP Regulations
HEATSET WEB OFFSET PRINTING.	SECTION 7
Box A(i) Proposed new activities in the Stationary Technical Unit	Section in Schedule 1 of the EP Regulations
HEATSET WEB OFFSET PRINTING (- ADDITIONAL PROCESS)	SECTION 7
Box B Directly associated activities	Section in Schedule 1 of the EP Regulations
Box B(i) Proposed new directly associated activities	Section in Schedule 1 of the EP Regulations

B1.2 Why is the variation application being made?

☑ specific permit conditions will require amending

☐ we are unsure whether the proposed changes will require a variation and wish the local authority to advise on this

B.1.3 Site Maps

Please provide:-

* A suitable map showing the location of the installation clearly defining extent of the installations in red and indicating the extent of the installation affected by the proposed change

Doc Reference B1.3

* A suitable plan showing the layout of activities on the site, including bulk storage of materials, waste storage areas and any external emission points to atmosphere, indicating which activities will be affected by the proposed change

Doc Reference B1.3.

* A suitable plan showing the site drainage system and all discharge points to drainage or water courses indicating which will be affected by the proposed change

Doc Reference B1.3B.

B2 The Installation

Please provide written information about the aspects of your installation listed below. We need this information to determine whether you will operate the installation in a way in which all the environmental requirements of the EP Regulations are met.

B2.1 Describe the proposed change to the installation and activities and identify the foreseeable emissions to air from effecting this change (this will include any foreseeable emissions during start up, shut down and any breakdown/abnormal operation)

The use of process flow diagrams may aid to simplify the operations

Doc Reference: B2.1

B2.2 Once all foreseeable changes in emissions as **a** result of the proposed change have been identified each emission should be characterised (including odour) and quantified.

Atmospheric emissions should be categorised under the following

iii. point source, (e.g. chimney / vent, identified by a number and detailed on a plan)
iv. fugitive source (e.g. from stockpiles / storage areas).

Doc Reference: B2.2.

B2.3 For each emission which will be affected by the proposed change describe the current and proposed technology and other techniques for preventing or, where that is not practicable reducing the emissions.

Doc Reference: B2.3.

B2.4 Describe the proposed measures for additional monitoring of all identified emissions as a result of the proposed change.

Doc Reference: B2.4

B2.5 Describe the effect the proposed change will have on your environmental management techniques, in relation to the installation activities described.

Doc Reference: B2.5.

B2.6 Detail in the table provided below, or on an additional sheet if preferred, the exact conditions you wish to change in your current permit.

Permit condition reference	Proposed new wording of condition
N/A. PROCESS DESCRIPTION AND GENERAL INFORMATION	THE PROCESS COMPRISES OF TWO HEAT SET WEB OFFSET PRINTING PRESSES, ~~Both~~ KOMORI SYSTEM 38 S (S for super not number 5) AND TWO. . . . . THE REST OF THIS CLAUSE IS CORRECT.
N/A. PROCESS DESCRIPTION AND GENERAL INFORMATION	EMMISIONS FROM THE KOMORI SYSTEM 38 S PRESSES ARE ABATED THROUGH AN INTEGRATED THERMAL AFTERBURNER AND THE RESIDUAL EMMISIONS ARE EXHAUSTED THROUGH A STACK OF HEIGHT AS CALCULATED VIA THE INSTALLERS DI CALCULATIONS (EXISTING WORDING IS NONSENSE).

B2.7 Additional information

Please supply any additional information which you would like us to take account of in considering this variation application.

Doc Reference B2.7

C1 Fees and Charges

The enclosed charging scheme leaflet gives details of how to calculate the variation application fee. Your application cannot be processed unless the correct fee is enclosed.

C1.1 Please state the amount enclosed as a fee for this variation application.

£ (cheques should be made payable to [ ]

We will confirm receipt of this fee when we write to you acknowledging your variation application.

C1.2 Please give any company purchase order number or other reference you wish to be used in relation to this fee.

C2 Annual charges

The application or granting of a permit variation will not affect the level of your annual subsistence charge, nor the requirement to pay it.

C3 Commercial confidentiality

C3.1 Is there any information in the application for a variation that you wish to justify being kept from the public register on the grounds of commercial confidentiality ?

No ☑

Yes ☐

Please provide full justification, considering the definition of commercial confidentiality within the EP Regulations.

Doc Reference _____

C3.2 Is there any information in the application for a variation that you believe should be kept from the public register on the grounds of national security ?

No ☑

Yes ☐

Do not write anything about this information on the form. Please provide full details on separate sheets, plus provide a copy of the variation application form to the Secretary of State/Welsh Ministers for a Direction on the issue of National Security.

C4 Data Protection

The information you give will be used by the Local Authority to determine your application for a variation. It will be placed on the relevant public register and used to monitor compliance with the permit conditions. We may also use and or disclose any of the information you give us in order to:

- consult with the public, public bodies and other organisations,
- carry out statistical analysis, research and development on environmental issues,
- provide public register information to enquirers,
- make sure you keep to the conditions of your permit and deal with any matters relating to your permit
- investigate possible breaches of environmental law and take any resulting action,
- prevent breaches of environmental law,
- offer you documents or services relating to environmental matters,
- respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows)
- assess customer service satisfaction and improve our service.

We may pass on the information to agents/ representatives who we ask to do any of these things on our behalf.

It is an offence under Regulation 38 of the EP Regulations, for the purpose of obtaining a variation to a permit (for yourself or anyone else) to:

- make a false statement which you know to be false or misleading in a material particular,
- recklessly make a statement which is false or misleading in a material particular.

If you make a false statement

- we may prosecute you, and
- if you are convicted, you are liable to a fine or imprisonment (or both).

C5 Declaration: previous offences (delete whichever is inapplicable)

I/~~We~~ certify

EITHER

No offences have been committed in the previous five years which are relevant to my/our competence to operate this installation in accordance with the EP Regulations.

OR

The following ~~offences have~~ been committed in the previous ~~five years~~ which may be relevant to ~~my/~~our competence to operating this installation in accordance with the ~~Regulations~~:

Signature 

Name EDWIN MAYHEW

Position DIRECTOR

Date 3.11.09.

C6 Declaration

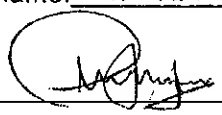
C6.1 Signature of current operator(s)*

I/We certify that the information in this application is correct. I/We apply for a permit in respect of the particulars described in this application (including supporting documentation) I/We have supplied.

Please note that each individual operator must sign the declaration themselves, even if an agent is acting on their behalf.

For the application from:

Installation name: ANCIENT HOUSE PRESS PLC

Signature 

Name EDWIN MAYHEW

Position DIRECTOR

Date 3.11.09

Signature

Name

Position

Date

** Where more than one person is defined as the operator, all should sign. Where a company or other body corporate – an authorised person should sign and provide evidence of authority from the board of the company or body corporate.*

Doc Reference B2.1

The proposed change is due to the introduction of a second Komori 38S heat-set web offset press which is identical to the existing printing press contained within the current authorisation. This will double the potential output of printed material of this type from the plant. Emissions to air will be similar to the existing process and will be vented through an integrated recuperative thermal oxidiser to remove VOC's (volatile organic compounds) from the emissions. This is exhausted through a short stack, fitted with an ejector cowl, directly above the oven. Each printing press can be operated independently and has it's own controls and monitoring. Each has its own thermal oxidiser and stack.

Doc reference B2.2

The new process will produce emissions in line with the existing process. The stack will be tested in line with the existing protocol for volatile organic compounds (as total carbon excluding particulate matter), carbon monoxide and nitrogen oxides expressed as nitrogen dioxide. Emission from the afterburner will be combustion products of natural gas - carbon dioxide and water vapour. Trace levels of unburned solvent, carbon monoxide and oxides of nitrogen may also be present. Our report following testing will demonstrate this.
In the case of fugitive emissions, raw materials are stored in sealed lidded containers and minimal exposure to air occurs during use. Finished products little odour or emissions as the product is dried rapidly and the surface sealed before further processing, boxing/palletising or onward delivery.

Doc reference B2.3

The new press has been purchased with an integrated afterburner/drying oven. In exactly the same way that the existing process incinerates the emissions from the drying process, the drying emissions will be forced through the integrated abatement process on the new press. The press cannot be operated unless the afterburner is operational. Running at optimised temperatures the afterburner destroys the VOC initially using mains gas to achieve temperature, supplemented thereafter with the "fuel" from the process once ink is applied to the paper.

Doc reference B2.4

We have agreed that we will initially test the emissions from the stack on the process twice per annum, in May and November and subject to good results this will be relaxed to once per annum.

Doc reference B2.5

We will maintain our existing environmental management techniques and extend them to cover and include the new press.

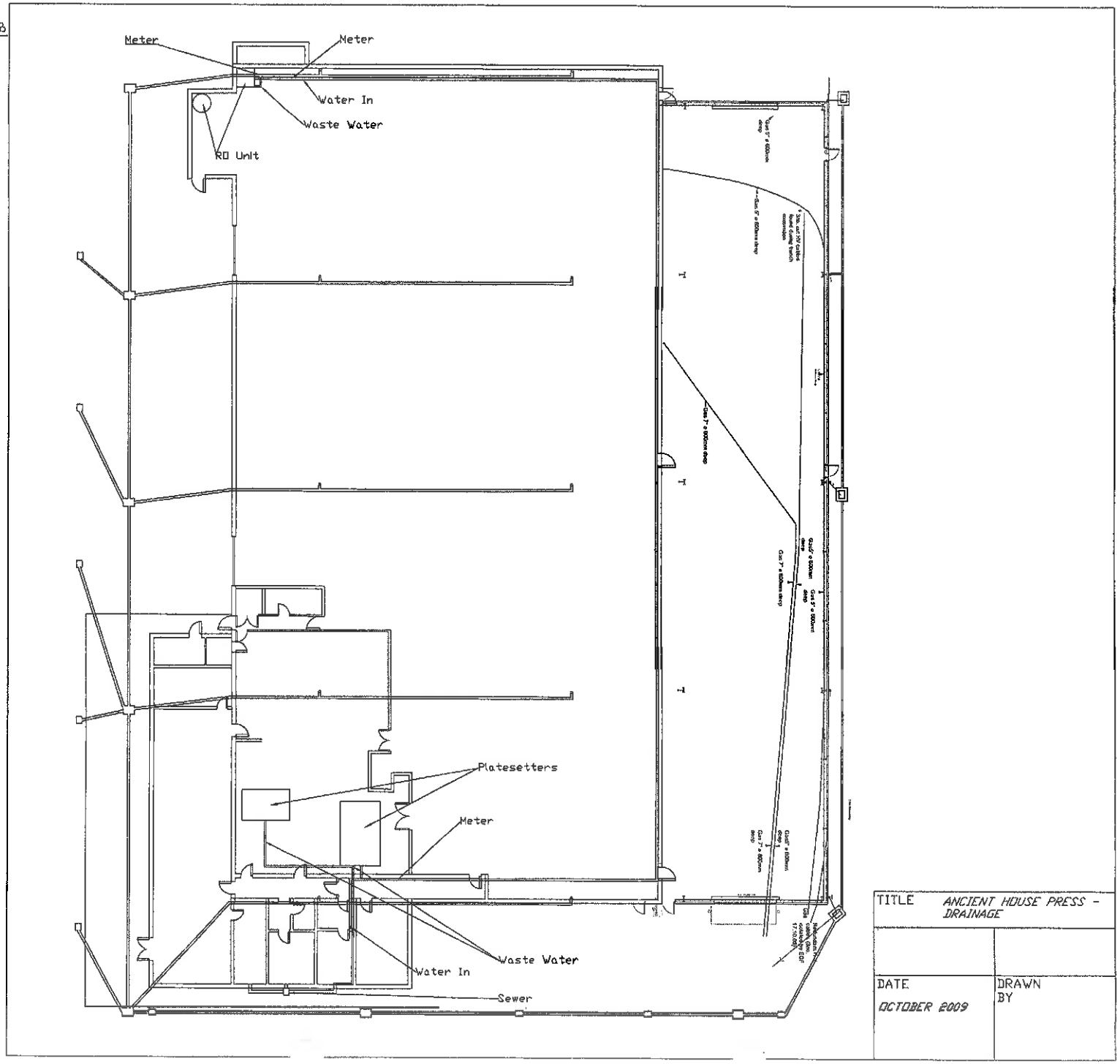
Doc reference B2.7

No additional information.

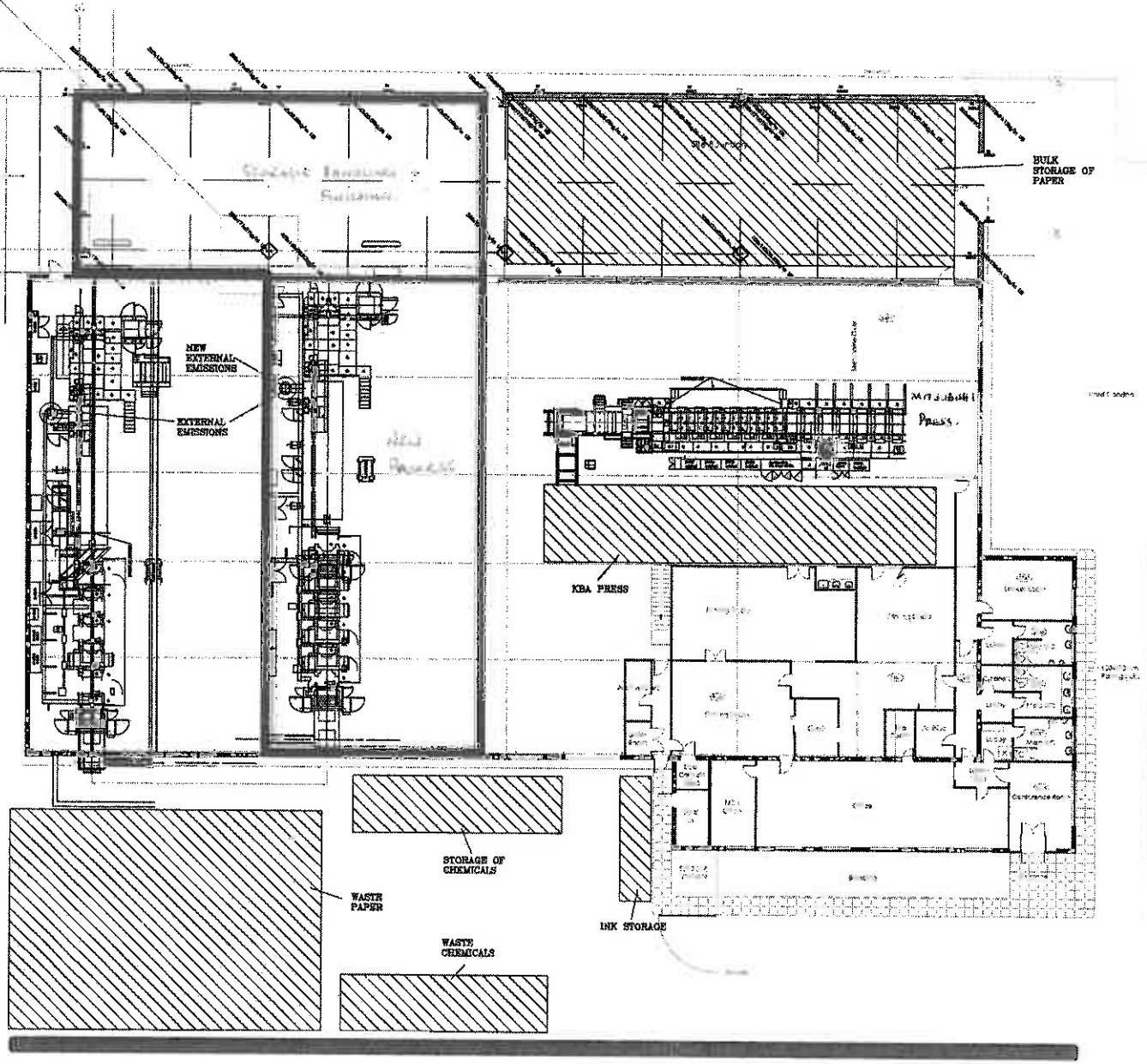
Re C1.1

No charging scheme leaflet has been enclosed with the application. Please therefore advise if there is a fee payable.

Document Reference B1:3B



Document Reference B13



CUSTOMER			
TITLE		DRAWN KMK	KOMORI UK LTD
DATE	SCALE	DRAWING No	SHEET SIZE A1

LEVINGTON ENVIRONMENTAL
Environmental testing & consultancy
Iken House
8 Acer Rd
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IP12 2GA

07932 645818
PeterDarnell@levington.com

Ancient House Printing Group
Whittle Rd
Ipswich
IP2 0HA

FAO: Mr E Mayhew

Test Report: LE390003 **Project No.** 390

Title: Emission Monitoring

Introduction

Monitoring of emissions was carried out at the above site on 15th December 2009, in accordance with the Pollution Prevention & Control Act 1999 and Pollution Prevention & Control (England & Wales) Regulations 2000, Permit Ref Number 6.4/RJD/4.

1. Process description

The process comprises a newly installed Komori System 38S heat set web offset printing press. Emissions from the Megtec Dual Dry TNV9.1 drier are vented through an integrated recuperative thermal oxidiser to remove VOC's (volatile organic compounds) from the emissions. This is exhausted through a short stack, fitted with an ejector cowl, directly above the oven. The afterburner is set to run at a chamber temperature of 761 °c and its performance continuously monitored.

The emissions were tested for the following parameters specified in the Authorisation, against the following concentration limits:

volatile organic compounds (as total carbon excluding particulate matter)	100mg/m3
carbon monoxide	100mg/m3
nitrogen oxides expressed as nitrogen dioxide	100mg/m3
total particulate matter	50mg/m3

All concentrations are 30 minute means, expressed at reference conditions of 273K and 101.3kPa without correction for water vapour or oxygen content, i.e. as mg/Nm3.

2. Sampling details

Emission sampling was carried out using the following industry standard techniques. The Testing Protocols are appended.

Sampling for particulates was carried out between 09:00 and 10:00hrs on 15th December 2009, when the press was running continuously for the test period.

Sampling for VOC and CO/NO was carried out between 10:00 and 15:30hrs on 15th December 2009, when the press was running for approximately 61% of the test period, printing at medium coverage at a rate of 27000 copies per hour.

2.1 Volatile Organic Compounds (VOCs)

Monitoring for VOCs was carried out using an M&A Thermofid portable flame ionisation detector (fid) and datalogger. Samples gases were drawn through a sintered sampling probe to remove particulate matter and along a heated sample line (180°C) to the fid detector.

Measurements were taken continuously and averaged every 10 minutes by the datalogger. The instrument was calibrated on site using 100ppm propane calibration gas. It should be noted that the instrument reads directly in mg/m3 of carbon excluding particulate matter. The samples were taken from one of the 2 x 2" sample points in the stack at platform level, directly on top of the oven.

2.2 Carbon Monoxide and Oxides of Nitrogen

Monitoring for carbon monoxide and oxides of nitrogen, along with carbon dioxide, oxygen and temperature, was carried out using a Testo 350XL flue gas analyser and datalogger. Measurements were taken every 10 minutes. The instrument was calibrated by the supplier using reference gases of known and gave a read out directly in ppm carbon monoxide, nitric oxide & nitrogen dioxide, and % carbon dioxide. Results were subsequently converted from ppm to mg/m3 and expressed at reference conditions of 273K and 101.3kPa, i.e. mg/Nm3, without correction for water vapour or oxygen.

The samples were taken from one of the 2 x 2" sample points in the stack at platform level, directly on top of the oven.

2.3 Total Particulate Matter

The sampling and analysis procedure is based on the main procedural requirements of British Standard BS ISO9096:2003. The samples were taken from one of the 2 x 2" sample points in the stack at platform level, directly on top of the oven.

Stack gas velocities were measured using an Airflow Developments PVM100 Pitot probe and meter.

3. Results

3.1 Summary of gaseous emission results

15/12/2009	VOC	CO	NO2	Temp
		mg/Nm3		c
Mean	**3.7**	**65**	**71**	**343**
Max	17.1	271	103	372
Min	0.0	1	49	291
EPA Limit	**100**	**100**	**100**	

The individual results are shown graphically in the Appendix to this report.

3.2 Stack gas flow measurements

Press	Stack dia mm	Area m2	Temp C	Vel. m/s	Flow m3/hr	Nm3/hr
New Komori	445	0.16	365	15.2	8512	3642

3.3 Total Particulate matter

Location	Sample	TPM mg/Nm3	
Stack	1	0.5	
	2	0.5	
Mean		0.5	
EPA Limit		**50**	

4. Discussion

The mean results for the VOCs, CO and NOx emissions were all well below the emission limits. The Komori press was running continuously for approximately 60% of the 5-hour test period, which is typical for this equipment. Stoppages were due to web breakage.

The result for the particulate emissions is well below the emission limit. The Komori press was running continuously throughout this test.

The installation is performing very well, and emissions at all times were below the prescribed limits.

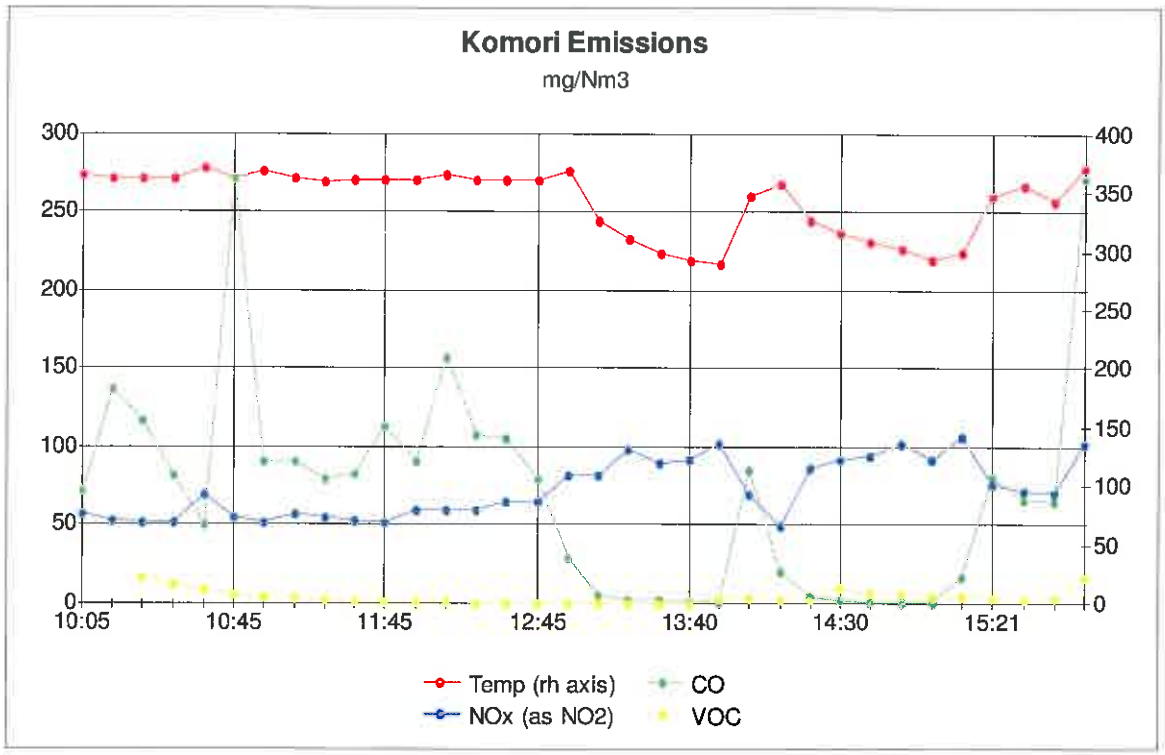
5. Recommendations

The VOC abatement is operating correctly and no remedial action is required.

Emissions should be checked annually to comply with the authorisation.

Signed:....P J Darnell.....
P.J.Darnell MRSC

Date: 29th December 2009



Stack showing test points

LEVINGTON ENVIRONMENTAL
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Iken House
8 Acer Rd
Rendlesham
Woodbridge
IP12 2GA

07932 645818
PeterDarnell@levington.com

Protocol for Particulate Emission Testing

Date: Dec 2009 **Site**: Ancient House Press Ltd.

Monitoring of emissions will carried out at the above site on 15th & 16th December 2009, in accordance with the Pollution Prevention & Control Act 1999 and Pollution Prevention & Control (England & Wales) Regulations 2000, Permit Ref Number 6.4/RJD/4.

1. Process description
The process comprises a Komori System 38S heat set web offset printing press. Emissions from the Megtec Dual Dry TNV9.1 drier are vented through an integrated recuperative thermal oxidiser to remove VOC's (volatile organic compounds) from the emissions. This is exhausted through a short stack, fitted with an ejector cowl, directly above the oven. The afterburner is set to run at a chamber temperature of 775°c.

Emission from the stack must comply with the following concentration limits:

total particulate matter shall not exceed 50 mg/m3.

2. Test Procedure
Particulate sampling will be in accordance with the main procedural requirements of British Standard BS ISO9096:2003.

Air flows within the stack will be measured at each sample point, to establish a velocity profile. Samples will then be taken isokinetically, by taking incremental samples at 2 locations within the stack. Particulates will be collected onto dried pre-weighed glass fibre filters, which will be subsequently dried and re-weighed to determine total dust concentrations. Two 1-hour samples will be taken to ensure representative results are obtained.

3. Sampling

3.1 Sampling and analysis will be carried out following Levington Laboratories method EA/5.

3.2 The sample train consists of a stainless steel probe with an appropriate nozzle, between 3 & 12.7mm dia. fitted with a Whatman 25mm GF/A filter in a two part cassette. This is connected via flexible tubing to a cooled Dreschel bottle as a water condenser, a second Dreschel bottle containing calcium chloride, a rotameter, a dry gas meter and finally a suction pump.

3.3 Leak testing is carried out in the lab by pressurising the assembled apparatus with compressed air and using soap solution to test the joints. On site, the nozzle is blocked to check there is no flow due to leaks.

3.4 Typical sampling flow rates are from 5 to15 litres/min, dependent on stack flows, and duplicate samples are taken over two 1 hour periods.

3.5 A four point sampling regime will be employed if the duct area is less than 2.5sqm (0.15d & 0.85d), otherwise an eight point regime will be used.

3.6 Dust from the sample probe is knocked from the probe into the filter after sampling with the pump still running. If necessary it is washed using a acetone.

3.7 The filters are pre-weighed after desiccation and loaded into the cassettes. After exposure they are dried, desiccated and re-weighed on an analytical balance with a resolution of 0.01mg.

3.8 The volume of the condensate collected in the first Dreschel bottle will be combined with the weight gain in the second bottle to calculate the moisture content, if required.

3.9 Results are expressed at reference conditions 273K, 101.3kPa without correction for water vapour content.

4. Site Requirements

4.1 Plant operating conditions are not within our scope of work, but samples are taken under 'normal operating conditions' according to plant management.

4.2 Sampling will only be carried out provided safe access is provided to a working platform with handrails adjacent to the sample points. Protective equipment will be worn as required.

5. Quality Control

5.1 Flow measurement equipment is calibrated by the manufacturer, and checked against laboratory reference sets.

5.2 The analytical balance is calibrated daily and maintained under a service contract.

5.3 A 'travelling blank' filter is weighed alongside the exposed filters.

5.4 During chemical analysis 'check samples' of known analysis are tested alongside samples.

6. Reporting

6.1 Data is logged on site onto form EA/5f, and then transferred onto a PC spreadsheet to enable the calculations to be carried out. A copy of this spreadsheet is appended to the Test Report.

6.2 Samples filter holders are numbered, and the details transferred to the site form. On receipt in the laboratory, all samples are given a unique laboratory reference number and logged into the laboratory 'Analytical Record' system.

6.3 Test reports are produced in a standard format, with a unique reference number. A summary of the test procedure and analytical results are included in the report.

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Environmental testing & consultancy
Iken House
8 Acer Rd
Rendlesham
Woodbridge
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07932 645818
PeterDarnell@levington.com

Protocol for Emission Testing

Date: Dec 2009 **Site**: Ancient House Press Ltd.

Monitoring of emissions will be carried out at the above site on 15 & 16th December, in accordance with the Pollution Prevention & Control Act 1999 and Pollution Prevention & Control (England & Wales) Regulations 2000, Permit Ref Number 6.4/RJD/4.

1. Process

The process comprises a new Komori System 38S heat set web offset printing press. Emissions from the Megtec Dual Dry TNV dryer are vented through an integrated recuperative thermal oxidiser to remove VOC's (volatile organic compounds) from the emissions. This is exhausted through a short stack, fitted with an ejector cowl, directly above the oven.

The thermal oxidiser system is designed to combust solvents (VOC's) from the heat set web offset printing inks, which contain 30 - 35% high boiling aliphatic hydrocarbons (C12 - C18) with a low aromatic content. Emission form the afterburner will be combustion products of natural gas - carbon dioxide and water vapour. Trace levels of unburned solvent, carbon monoxide and oxides of nitrogen may also be present.

The test will be carried out under normal running conditions, whilst printing under high load, with typically 50 - 80% ink coverage. During the run there may be periods when temporary stoppages occur due to web breakages and for blanket washing. Testing will be continued to include these situations.

The emissions from the stack will be tested for the following parameters specified in the authorisation, against the following concentration limits:

volatile organic compounds (as total carbon excluding particulate matter)	100mg/Nm3
carbon monoxide	100mg/Nm3
nitrogen oxides expressed as nitrogen dioxide	100mg/Nm3

2. Test Procedure

Emission sampling will be carried out using industry standard techniques. Monitoring for VOC's will be carried out using a M&A Thermofid portable flame ionisation detector (fid) with a heated sample line and datalogger. Monitoring for flue gas parameters will be carried out using a Testo 350XL flue gas analyser.

Stack gas velocity will be measured using an Airflow Developments PVM100 micro-anemometer and Pitot probe, and corrected for temperature.

The test will be carried out under normal operating conditions.

3. Sampling

3.1 Sampling for VOCs & flue gas parameters will be carried out at the 2 x 2" sample points at the base of the stack, 2m above the unit.

3.2 Each instrument has a stainless steel probe, which will be fitted into the sample point and connected directly to the inlet port of the instrument.

3.3 Results will be recorded directly by the datalogger facility on each instrument.

3.4 Results will be corrected to normal temperature and pressure (273K & 101.3kPa) and expressed as mg/Nm3.

3.5 Sampling will be carried out over a minimum of 5 hours periods during a typical days printing. (Press operation may not be constant)

4. Site Requirements

4.1 Plant operating conditions are not within our scope of work, but samples will be taken under 'normal operating conditions' according to plant management. Any stoppages will be recorded.

4.2 Sampling will only be carried out provided safe access is provided to a working platform with handrails adjacent to the sample points. Protective equipment will be worn as required.

5. Quality Control

5.1 Flow measurement equipment is calibrated by the manufacturer, and checked against laboratory reference sets.

5.2 Gas sampling and analysis instruments are supplied with calibration certificates.

6. Reporting

6.1 Measurement data will be logged on site onto form FG1, and then transferred onto a PC spreadsheet to enable the calculations to be carried out.

6.2 Test reports are produced in a standard format, with a unique reference number. A summary of the test procedure and analytical results will be included in the report.

6.3 Results of the emission tests will be reported graphically.

X: Ancient House.

NATURAL ENGLAND

HOME MAPS HELP

Search map for English postcodes, places, sites and more... Go

- Nature Reserves and Country Parks
- Agri-environment Schemes
- Sites of Special Scientific Interest (SSSI)
- International Sites
- Biodiversity Action Plan Priority Habitats
- Geological Sites Map
- Targeting and Planning Map
- Agri-environment Delivery on SSSIs

Click on the map to get information about map features, or click and drag to pa

Search for International sites on IP2 0 HA on 04.02.10.
None on map.
VPA.
X = Ancient House

NATURAL ENGLAND

HOME MAPS HELP

Search map for English postcodes, places, sites and more... Go

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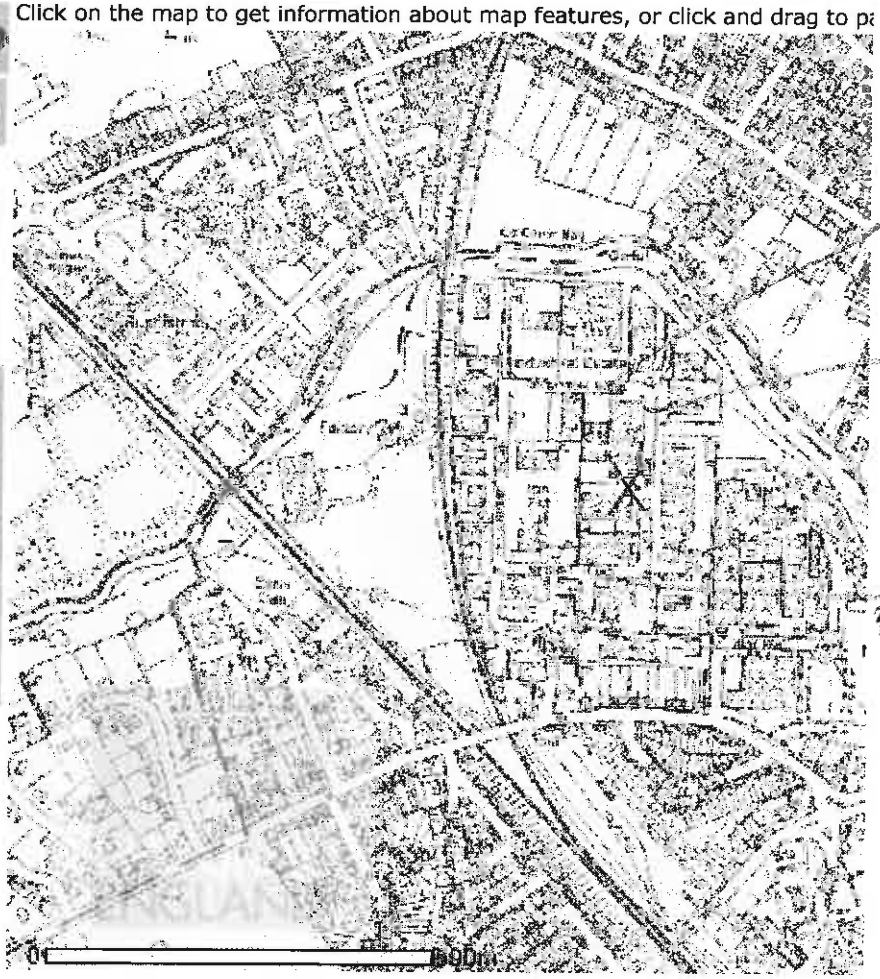
- Agri-environment Delivery on SSSIs

Click on the map to get information about map features, or click and drag to pa



GFP Consulting Engineers 26 St Hugh Street LINCOLN 01522 883810	Project: ANCIENT HOUSE PRINTING				Job Ref.: 09/4406	
	Section: D1 CALCULATIONS				Sheet no./rev.: D1 1	
	Calc. by: GFP	Date: 12/7/2009	Chk'd by:	Date:	App'd by:	Date:

D1 CALCULATIONS

MAX FLOW

Purpose of the Report

The purpose of this report is to calculate the minimum stack height to ensure adequate dispersion of contaminants derived from the oxidation process. The calculations are undertaken in accordance with Her Majesty's Inspectorate of Pollution, Environmental Protection Act 1990, Technical Guidance Note (Dispersion) D1.

Criteria

Based on information supplied

Major Pollutants - Carbon	20mg/m^3
NOX	100mg/m^3
Carbon Monoxide	100mg/m^3
PM_{10}	50mg/m^3

1/ Poss source of PM_{10} from stack (from cleaning agents & from fuel combustion for thermal oxidiser (VOC abatement))

2/ No PM_{10} inc. → point source

discharge temperature; T = 360

discharge temperature Kelvin; $T_K = T + 273 =$ **633.00**

discharge volume;V= 3600;m^3/h; $V_{norm} = V/3600 =$ **1.00**;m^3/s

volume of discharge at stack conditions; $V_{stack} = V_{norm} * 633/273 =$ **2.32**;m^3/s

3/ will stack to 2nd press be up to existing one? → yes

* what fuel used? gas

EMISSION RATES

NOX; $E_N = 100 * V_{stack} /1000 =$ **0.23**

Carbon Monoxide; $E_{CO} = 100 * V_{stack} /1000 =$ **0.23**

Carbon; $E_{voc} = 20 * V_{stack} /1000 =$ **0.05**

Calculation of Pollution Index Pi

ASSUME 50/50 SPLIT - NO/NO2

Pollutant	Emission (g/s)	Guideline Value (mg/m^3)	Background Value (mg/m^3)	Pollution Index m^3/s
NO	0.12	1.0	0.15	141
NO_2	0.12	0.2	0.09	1091
Carbon Monoxide	0.23	57.00	n/a	4.04

stack height based on pollution index of 1091m^3/s

GFP Consulting Engineers 26 St Hugh Street LINCOLN 01522 883810	Project ANCIENT HOUSE PRINTING				Job Ref. 09/4406	
	Section D1 CALCULATIONS				Sheet no./rev. D1 2	
	Calc. by GFP	Date 12/7/2009	Chk'd by	Date	App'd by	Date

HEIGHT DUE TO BOUYANCY

P_i = 1091

$Q_M = V_{stack} * (1-283/T_K)/2.9$ = **0.44**

Remember to if check Q<1

if $Q_M \leq 1$;then; $a = -1.11 - 0.19 * \log(Q_M)$ = **-1.04**

$b = 0.49 + 0.005*\log(Q_M)$ = **0.49**

$U_b = 10^a * P_i^b$ = **2.76**

if $Q \leq 1$; then; $U_{bmin} = 1.95*Q_M^{.19}$ = **1.67**

U_{bmin4} = 2.76

HEIGHT DUE TO MOMENTUM

Stack diameter; D = 0.45

stack area; $A = pi * D^2/4$ = **0.16**

Discharge velocity; $w = V_{stack}/A$ = **14.58**

momentum; $M = V_{stack} * 283 * w/T_K$ = **15.11**

P_i = 1091

$x1 = -3.7 + (\log(M)^{0.9})$ = **-2.54**

$y1 = 5.9 - 0.624*\log(M)$ = **5.16**

$z1 = 4.24 - 9.7*\log(M) + 1.47*(\log(M))^2 - 0.07*(\log(M))^3$ = **-5.27**

$\log(U_m)$; $u1 = x1 + (y1*\log(P_i) + z1)^{0.5}$ = **0.69**

$U_m = 10^{u1}$ = **4.87**

$U_{mmin} = 0.82*M^{.32}$ = **1.96**

Therefore; U_{m2} = 4.87

BUILDING HEIGHT CORRECTION

Building height; H = 6.2

U = 2.76

A = 4.87/2.76 = **1.76**

$C = H + 0.6*(U + (2.5*H - U)*(1-A^{-U/H}))$ = **9.56**

Therefore; C_{cor} = 9.6m

FINAL HEIGHT

THE FINAL STACK HEIGHT CORRECTED FOR BUILDINGS WITHIN 5UM SHOULD NOT BE LESS THAN 9.6 METRES

cheque passed to CA. letter sent ...

Ancient House Printing Group

22nd January 2010

27

Mrs Varuna Parsad Addy
Senior Environmental Health Assistant
Ipswich Borough Council
Grafton House
15-17 Russell Road
Ipswich
IP1 2DE

Dear Mrs Addy

Application for permit variation

Thank you for your recent letter regarding the outstanding permit variation. I am now able to enclose the following documents in addition to the application already submitted.

1. Our cheque in the sum of £994 as advised
2. D1 calculations as supplied by the installer of the stack. The chimney has been built to a height of 9.6 metres.
3. Test results from the recent emissions test carried out by Levington Laboratories in simulated production mode.

I trust this is in order and look forward to your response in due course.

Yours sincerely,

Edwin Mayhew
Finance Director
Telephone: (DDI) 01473 269637 | (Company) 01473 232777 | Fax: 01473 280448
E-mail: emayhew@acienthouse.co.uk | Web Site www.ancienthouse.co.uk

New Application

Ancient House Printing Group

WK/20090890

11th November 2009

Mrs Varunda Addy
Ipswich Borough Council Environmental Services
Grafton House
15-17 Russell Road
Ipswich
Suffolk
IP1 2DE

16 NOV 2009

Dear Mrs Varunda

Pollution Prevention and Control Act 1999

In reply to your letters of 20th July and 26th October may I please apologise for the delay in replying. As explained I have had long periods of absence through ill health in the last few months which is alien to my normal health record and has caused me some considerable problems with work responsibilities and workload.

I have completed the Application for a variation of permit conditions in respect of the additional printing press we are installing. I have completed this to the best of my knowledge and belief. Additional supporting documents are attached to the application and enclosed as requested.

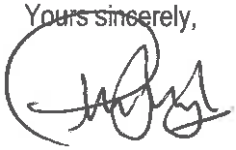
With regard to the other points raised in your letter of 20th July I would comment as follows:

1. I have put in place a system of converting litres to kilos. The specific gravity of each product will be held on our database enabling us to make the conversion on the report. This will be applied on the next report to be filed with you shortly.
2. The ink used by the Mitsubishi press is a vegetable based ink and is pumped to the press on the same system as the KBA press. We do not have flow meters to measure this exactly but based upon our knowledge and a reasonable estimate of the split in activity between the 2 processes I would estimate the usage to be approximately 45,000kg per annum.
3. The waste carrier certificate for J & G Environmental is enclosed.
4. I have been trying to obtain the D1 calculations for this current installation. Apparently my colleague is in dispute with the supplier over other aspects of work that he carried out for us and he is being uncooperative in supplying the D1's. I have personally spoken to him this week and have had his assurance that he will supply them to us "by the middle of next week" when one of his colleagues returns from holiday. In the interim I am enclosing the D1 calculations from the previous installation in 2004 which were approved by IBC at the time. My understanding is that the new stack height is compatible with these calculations. I will forward the new D1 calculations when I get them.
5. I have arranged with our consultants to test the emissions later this month/early December as requested. From our conversation I accept that we will test twice per annum in the short term and look to relax this to once a year once the testing results prove the effectiveness of the abatement equipment.
6. With regard to the link between the sheet-fed presses and the heat-set web presses, our view would be that the link is that they are both printing processes and customers specifications will dictate which path is followed. Typically this will be influenced by run length and paper weight but also could be dictated by the potential use of the product. Sheet-fed presses typically produce higher quality products on heavier weight materials in smaller quantities whilst heat-set web presses tend to produce products in greater quantities and at greater speed on a limited weight range of materials. Generally a product is produced one way or the other. Occasionally 1-2% of

jobs per annum are produced using a combination of the processes with, say, the covers being produced on the sheet-fed presses and the text pages on the heat-set web presses.

Finally I trust the above meets with your approval but if you have any further queries please do not hesitate to contact me.

Yours sincerely,



Edwin Mayhew
Finance Director
Telephone: (DDI) 01473 269637 | (Company) 01473 232777 | Fax: 01473 280448
E-mail: emayhew@acienthouse.co.uk | Web Site www.ancienthouse.co.uk

ENVIRONMENT AGENCY

CERTIFICATE OF REGISTRATION UNDER THE CONTROL OF POLLUTION (AMENDMENT) ACT 1989

Regulation Authority

Name: South West Region - South Wessex Area

Address: Rivers House, Sunrise Business Park
Higher Shaftesbury Road
Blandford, Dorset

Post Code: DT11 8ST

Tel: 01258 483488 Telex: Fax: 01258 455998

The following information is hereby certified by the above-mentioned authority to be information which at the date of this certificate* is entered in the register which they maintain under regulation 3 of the Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991:-

Name(s) of registered carrier: J & G Environmental Ltd

Registration number: DOR/242143

Business name (if any): J & G Environmental Ltd

Address of registered carrier's principal place of business: J & G House
Holland Way Ind Estate
Blandford
Dorset
DT11 7TA

Tel: 01258 453445 Telex: 07980 870597 Fax: 01258 450991

Date of registration: 03/04/2007

Date of expiry of registration*: 02/04/2010

Date on which last amendment (if any) was made in the carrier's entry in the register: 03/04/2007

Signature of authorised officer of the regulation authority: [signature]

Date: 2.4/04/06

[See over]

Part B Variation form

Application for a variation of permit conditions

Local Authority Pollution Prevention and Control
Pollution Prevention and Control Act, 1999
Environmental Permitting (England and Wales) Regulations 2007

Introduction

When to use this form
This environmental permitting regime is known as and referred to as Local Authority Pollution Prevention and Control ('LAPPC'). Installations permitted under this regime are known as Part 'B' installations. Use this form if you already have a permit and wish to vary the permit conditions or wish to make a change to your installation.

Before you start to fill in this form
You are strongly advised to read relevant parts of the Defra general guidance manual issued for LA-IPPC and LAPPC, republished in 2008 and available at http://www.defra.gov.uk/environment/ppc/localauth/pubs/guidance/manuals.htm. This contains a list of other documents you may need to refer to when you are preparing your application, and explains some of the technical terms used. You will also need to read the relevant Process Guidance note. The EP Regulations can be obtained from The Office of Public Sector Information, or viewed on their website at http://www.opsi.gov.uk/legislation/about_legislation.htm.

Which parts of the form to fill in
You should fill in as much of this form as possible. The appropriate fee must be enclosed with the variation application to enable it to be processed further. When complete return to:

Insert local authority address

Other documents you may need to submit
There are number of other documents you may need to send us with your variation application. Each time a request for a document is made in the form you will need to record a document reference number for the document or documents that you are submitting in the space provided on the form for this purpose. Please also mark the document(s) clearly with your permit reference number and the name of the installation.

Using continuation sheets
In the case of the questions on the form itself, please use a continuation sheet if you need extra space; but please indicate clearly on the form that you have done so by stating a document reference number for that continuation sheet. Please also mark the continuation sheet itself clearly with the information referred to above.

Copies - *not relevant for e-applications*
Please send the original and [ ] copies of the form and all other supporting material, to assist the Authority in conducting any necessary consultation process.

If you need help and advice
We have made the form as straightforward as possible, but please get in touch with us at the local authority address given above if you need any advice on how to set out the information we need.

A1 Applicant details

A1.1 Name of the installation

ANCIENT HOUSE PRESS PLC

A1.2 Please give the address of the site of the installation

8, WHITTLE ROAD, HADLEIGH ROAD INDUSTRIAL ESTATE IPSWICH

Postcode IP2 0HA Telephone 01473 232777

A1.3 Permit reference number

6.4/RJD/4/05

A2.1 The Operator – Please provide the full name of company or corporate body

ANCIENT HOUSE PRESS PLC

Trading/business name (if different)

Registered Office address

UNIT R HADLEIGH ROAD INDUSTRIAL ESTATE IPSWICH

Postcode: IP2 0HA.

Principal Office address (if different)

Postcode:

Company registration number

00410453

A3.1 Who can we contact about your application?

It will help to have someone who we can contact directly with any questions about your application. The person you name should have the authority to act on behalf of the operator - This can be an agent or consultant.

Name EDWIN MAYHEW

Position DIRECTOR.

Address 8 WHITTLE ROAD (AS ABOVE)

Postcode

Telephone number 01473 232777

Fax number 01473 280448

email address emayhew@ancienthouse.co.uk.

B1 About the installation

Please fill in the table below with details of all the current activities and proposed activities at the whole installation.

In **Column 1, Box A,** ***Activities in the stationary technical unit***
Please identify all activities listed in Schedule 1 to the EP Regulations that are carried out in the stationary technical unit of the installation.

In **Column 1, Box A(i),** ***Proposed new activities in the stationary technical unit***
Please identify all activities listed in Schedule 1 to the EP Regulations that are proposed to be carried out in the stationary technical unit of the installation.

In **Column 1, Box B,** ***Directly associated activities***
Please identify any directly associated activities that are carried out on the same site which:

* have a technical connection with the activities in the stationary technical unit
* could have an effect on pollution.

In **Column 1, Box B(i),** ***Directly associated activities***
Please identify any directly associated activities that are proposed, to be carried out on the same site which:

* have a technical connection with the activities in the stationary technical unit
* could have an effect on pollution

In **Column 2, Both Boxes A and B**, please quote the Chapter number, Section number, then paragraph and sub-paragraph number as shown in Part 2 of Schedule 1 to the EP Regulations [For example, *Manufacturing glass and glass fibre where the use of lead or any lead compound is involved*, would be listed as Chapter 3, Section 3.3, Part B(b)].

B1.1 Installation table for variation of permit conditions

COLUMN 1	COLUMN 2
Box A Activities in the Stationary Technical Unit	Section in Schedule 1 of the EP Regulations
HEATSET WEB OFFSET PRINTING.	SECTION 7
Box A(i) Proposed new activities in the Stationary Technical Unit	Section in Schedule 1 of the EP Regulations
HEATSET WEB OFFSET PRINTING (- ADDITIONAL PROCESS)	SECTION 7
Box B Directly associated activities	Section in Schedule 1 of the EP Regulations
Box B(i) Proposed new directly associated activities	Section in Schedule 1 of the EP Regulations

B1.2 Why is the variation application being made?

☑ specific permit conditions will require amending

☐ we are unsure whether the proposed changes will require a variation and wish the local authority to advise on this

B.1.3 Site Maps

Please provide:-

* A suitable map showing the location of the installation clearly defining extent of the installations in red and indicating the extent of the installation affected by the proposed change

Doc Reference B1.3

* A suitable plan showing the layout of activities on the site, including bulk storage of materials, waste storage areas and any external emission points to atmosphere, indicating which activities will be affected by the proposed change

Doc Reference B1.3.

* A suitable plan showing the site drainage system and all discharge points to drainage or water courses indicating which will be affected by the proposed change

Doc Reference B1.3B.

B2 The Installation

Please provide written information about the aspects of your installation listed below. We need this information to determine whether you will operate the installation in a way in which all the environmental requirements of the EP Regulations are met.

B2.1 Describe the proposed change to the installation and activities and identify the foreseeable emissions to air from effecting this change (this will include any foreseeable emissions during start up, shut down and any breakdown/abnormal operation)

The use of process flow diagrams may aid to simplify the operations

Doc Reference: B2.1

B2.2 Once all foreseeable changes in emissions as a result of the proposed change have been identified each emission should be characterised (including odour) and quantified.

Atmospheric emissions should be categorised under the following

iii. point source, (e.g. chimney / vent, identified by a number and detailed on a plan)
iv. fugitive source (e.g. from stockpiles / storage areas).

Doc Reference: B2.2.

B2.3 For each emission which will be affected by the proposed change describe the current and proposed technology and other techniques for preventing or, where that is not practicable reducing the emissions.

Doc Reference: B2.3.

B2.4 Describe the proposed measures for additional monitoring of all identified emissions as a result of the proposed change.

Doc Reference: B2.4

B2.5 Describe the effect the proposed change will have on your environmental management techniques, in relation to the installation activities described.

Doc Reference: B2.5.

B2.6 Detail in the table provided below, or on an additional sheet if preferred, the exact conditions you wish to change in your current permit.

Permit condition reference	Proposed new wording of condition
N/A. Process Description and General Information	THE PROCESS COMPRISES OF TWO HEAT SET WEB OFFSET PRINTING PRESSES, BOTH KOMORI SYSTEM 38 S (S for Sugar not number 5) AND TWO..... THE REST OF THIS CLAUSE IS CORRECT.
N/A. Process Description and General Information	EMMISIONS FROM THE KOMORI SYSTEM 38 S PRESSES ARE ABATED THROUGH AN INTEGRATED THERMAL AFTERBURNER AND THE RESIDUAL EMMASIONS ARE EXHAUSTED THROUGH A STACK OF HEIGHT AS CALCULATED VIA THE INSTALLERS DI CALCULATIONS (EXISTING WORDING IS NONSENSE).

B2.7 Additional information

Please supply any additional information which you would like us to take account of in considering this variation application.

Doc Reference B2.7

C1 Fees and Charges

The enclosed charging scheme leaflet gives details of how to calculate the variation application fee. Your application cannot be processed unless the correct fee is enclosed.

C1.1 Please state the amount enclosed as a fee for this variation application.

£ (cheques should be made payable to [ ]

We will confirm receipt of this fee when we write to you acknowledging your variation application.

C1.2 Please give any company purchase order number or other reference you wish to be used in relation to this fee.

C2 Annual charges

The application or granting of a permit variation will not affect the level of your annual subsistence charge, nor the requirement to pay it.

C3 Commercial confidentiality

C3.1 Is there any information in the application for a variation that you wish to justify being kept from the public register on the grounds of commercial confidentiality ?

No ☑

Yes ☐

Please provide full justification, considering the definition of commercial confidentiality within the EP Regulations.

Doc Reference _____

C3.2 Is there any information in the application for a variation that you believe should be kept from the public register on the grounds of national security ?

No ☑

Yes ☐

Do not write anything about this information on the form. Please provide full details on separate sheets, plus provide a copy of the variation application form to the Secretary of State/Welsh Ministers for a Direction on the issue of National Security.

C4 Data Protection

The information you give will be used by the Local Authority to determine your application for a variation. It will be placed on the relevant public register and used to monitor compliance with the permit conditions. We may also use and or disclose any of the information you give us in order to:

- consult with the public, public bodies and other organisations,
- carry out statistical analysis, research and development on environmental issues,
- provide public register information to enquirers,
- make sure you keep to the conditions of your permit and deal with any matters relating to your permit
- investigate possible breaches of environmental law and take any resulting action,
- prevent breaches of environmental law,
- offer you documents or services relating to environmental matters,
- respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows)
- assess customer service satisfaction and improve our service.

We may pass on the information to agents/ representatives who we ask to do any of these things on our behalf.

It is an offence under Regulation 38 of the EP Regulations, for the purpose of obtaining a variation to a permit (for yourself or anyone else) to:

- make a false statement which you know to be false or misleading in a material particular,
- recklessly make a statement which is false or misleading in a material particular.

If you make a false statement

- we may prosecute you, and
- if you are convicted, you are liable to a fine or imprisonment (or both).

C5 Declaration: previous offences (delete whichever is inapplicable)

I/~~We~~ certify

EITHER

No offences have been committed in the previous five years which are relevant to my/our competence to operate this installation in accordance with the EP Regulations.

OR

The following offences ~~have~~ been committed in the previous ~~five years~~ which may be relevant to ~~my/~~our competence to operating this installation in accordance with the ~~Regulations~~:

Signature 

Name EDWIN MAYHEW

Position DIRECTOR

Date 3.11.09.

C6 Declaration

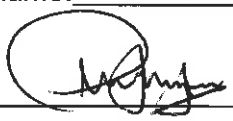
C6.1 Signature of current operator(s)*

I/We certify that the information in this application is correct. I/We apply for a permit in respect of the particulars described in this application (including supporting documentation) I/We have supplied.

Please note that each individual operator must sign the declaration themselves, even if an agent is acting on their behalf.

For the application from:

Installation name: ANCIENT HOUSE PRESS PLC

Signature 

Name EDWIN MAYHEW

Position DIRECTOR

Date 3.11.09

Signature

Name

Position

Date

** Where more than one person is defined as the operator, all should sign. Where a company or other body corporate – an authorised person should sign and provide evidence of authority from the board of the company or body corporate.*

Doc Reference B2.1

The proposed change is due to the introduction of a second Komori 38S heat-set web offset press which is identical to the existing printing press contained within the current authorisation. This will double the potential output of printed material of this type from the plant. Emissions to air will be similar to the existing process and will be vented through an integrated recuperative thermal oxidiser to remove VOC's (volatile organic compounds) from the emissions. This is exhausted through a short stack, fitted with an ejector cowl, directly above the oven. Each printing press can be operated independently and has it's own controls and monitoring. Each has its own thermal oxidiser and stack.

Doc reference B2.2

The new process will produce emissions in line with the existing process. The stack will be tested in line with the existing protocol for volatile organic compounds (as total carbon excluding particulate matter), carbon monoxide and nitrogen oxides expressed as nitrogen dioxide. Emission from the afterburner will be combustion products of natural gas - carbon dioxide and water vapour. Trace levels of unburned solvent, carbon monoxide and oxides of nitrogen may also be present. Our report following testing will demonstrate this.
In the case of fugitive emissions, raw materials are stored in sealed lidded containers and minimal exposure to air occurs during use. Finished products little odour or emissions as the product is dried rapidly and the surface sealed before further processing, boxing/palletising or onward delivery.

Doc reference B2.3

The new press has been purchased with an integrated afterburner/drying oven. In exactly the same way that the existing process incinerates the emissions from the drying process, the drying emissions will be forced through the integrated abatement process on the new press. The press cannot be operated unless the afterburner is operational. Running at optimised temperatures the afterburner destroys the VOC initially using mains gas to achieve temperature, supplemented thereafter with the "fuel" from the process once ink is applied to the paper.

Doc reference B2.4

We have agreed that we will initially test the emissions from the stack on the process twice per annum, in May and November and subject to good results this will be relaxed to once per annum.

Doc reference B2.5

We will maintain our existing environmental management techniques and extend them to cover and include the new press.

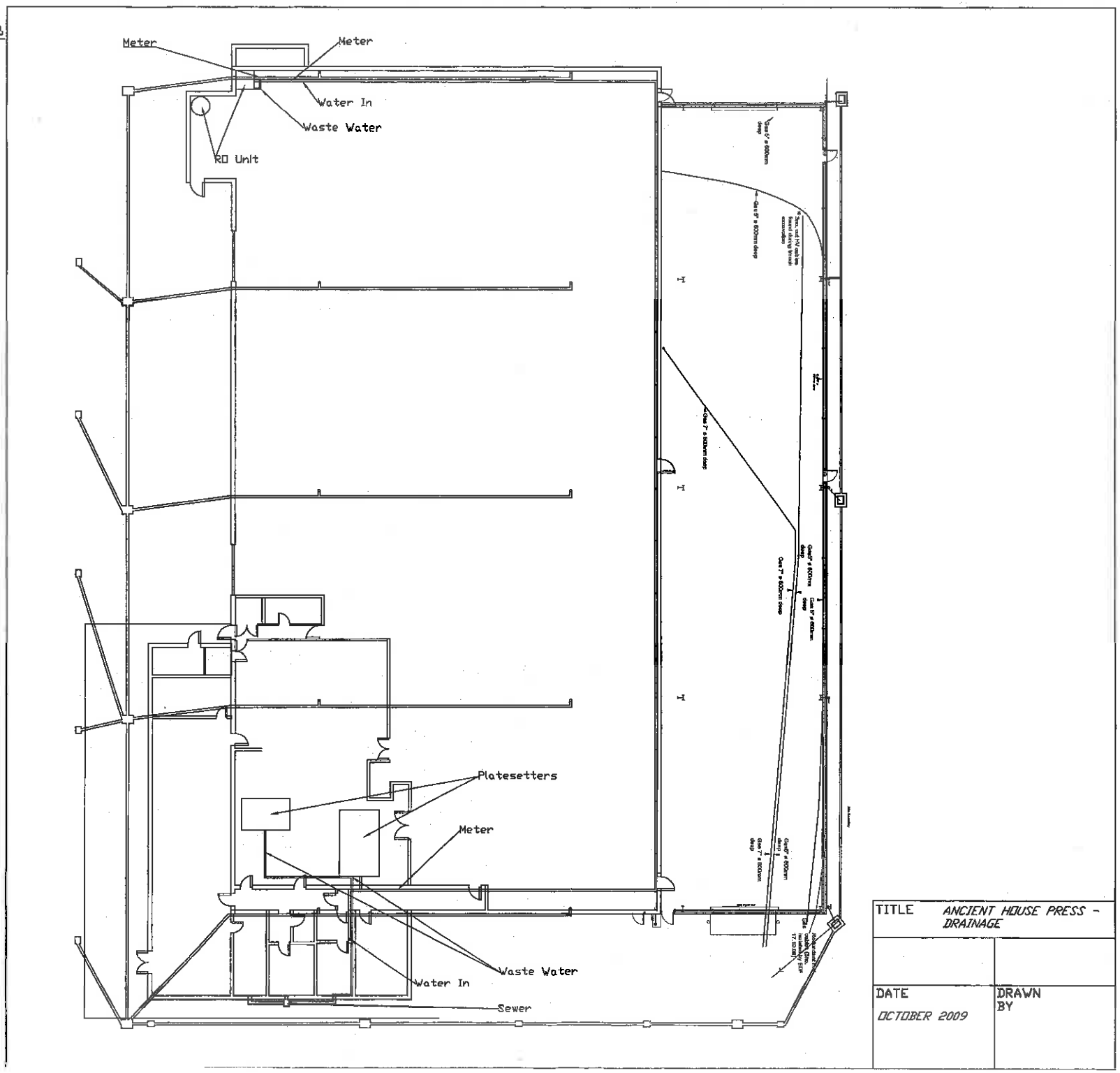
Doc reference B2.7

No additional information.

Re C1.1

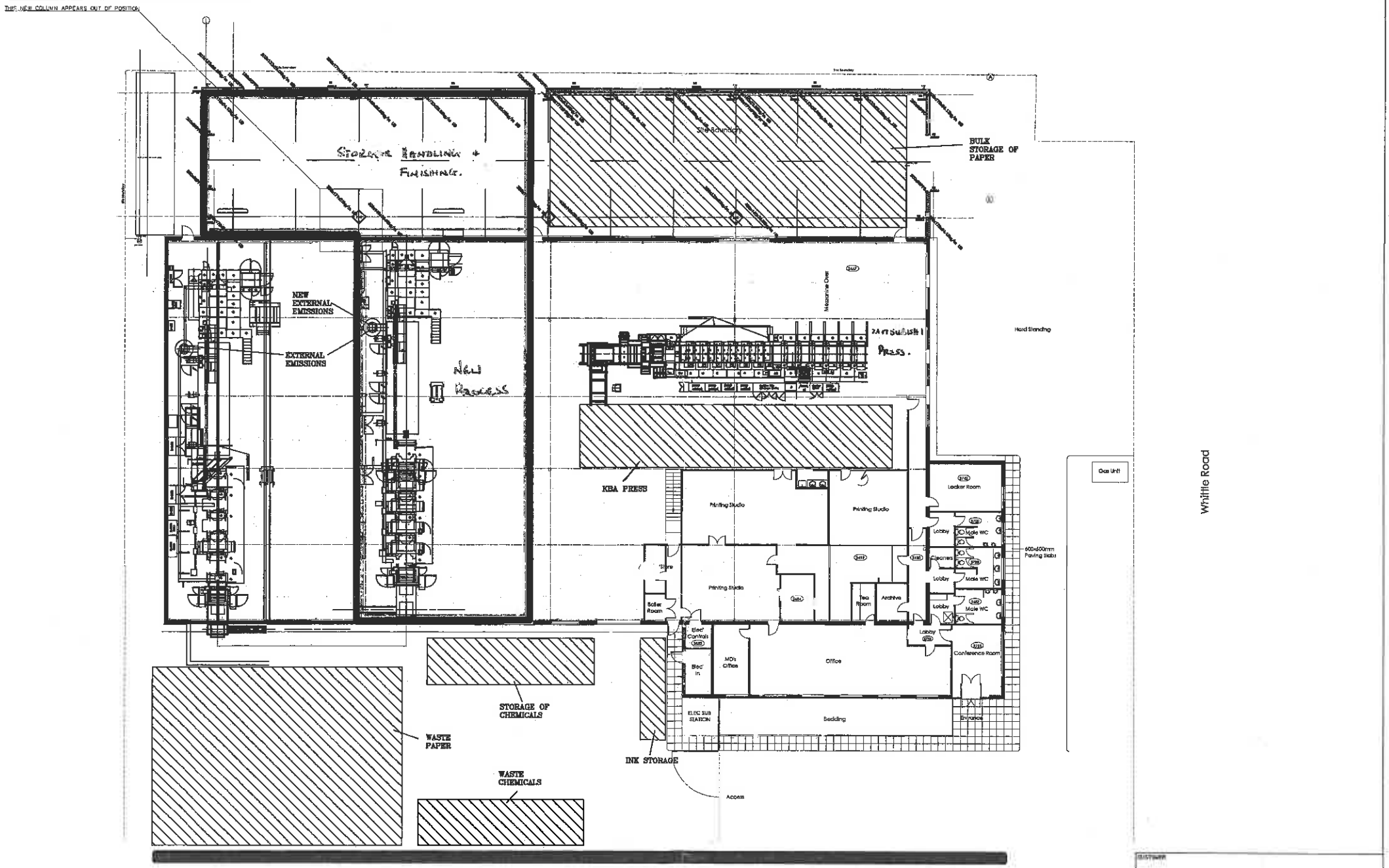
No charging scheme leaflet has been enclosed with the application. Please therefore advise if there is a fee payable.

Document Reference B138



TITLE	*ANCIENT HOUSE PRESS - DRAINAGE*
DATE *OCTOBER 2009*	DRAWN BY

Document Reference B1-3



TITLE			KOMORI
	DRAWN KUK		KOMORI UK LTD
DATE	SCALE	DRAWING No	SHEET SIZE A1

Next, calculate $\mathbf{P_i}$

$$\mathbf{P_i} = \frac{0.13089}{(57 - 0)} \times 1000 \qquad = \frac{0.13089}{57} \times 1000 = \mathbf{1.823}\ m^3\ s^{-1}$$

1.2 for total Carbon content (C):

Known information:-

Exhaust volume = 1.0389 Nm s^{-1} (calculated in 1.1)
C concentration = 20 mg Nm^{-3} (from manufacturers)
G_d from Table 1 = 20 mg m^{-3} (assumption as no value given)
B_c from Table 2 = 0 mg m^{-3} (no value given so take as zero)

Next, calculate D g s^{-1}

$$D = \frac{mg\ Nm^{-3}}{1000\ mg\ g^{-1}} \times Nm^3\ s^{-1} \qquad = \frac{20}{1000} \times 1.0389 = 0.0208\ g\ s^{-1}$$

Next calculate $\mathbf{P_i}$

$$\mathbf{P_i} = \frac{0.0208}{(20 - 0)} \times 1000 \qquad = \frac{0.0208}{20} \times 1000 = \mathbf{1.04}\ m^3\ s^{-1}$$

1.3 for Nitrogen oxides expressed as nitrogen dioxide (NO_2):

Known information:-

Exhaust volume = 1.0389 Nm s^{-1} (calculated in 1.1)
C concentration = 50 mg Nm^{-3} (average figure)
G_d from Table 1 = 0.20 mg m^{-3}
B_c from Table 2 = 0.12 mg m^{-3} (highly developed large urban area)

Next, calculate D g s^{-1}

$$D = \frac{mg\ Nm^{-3}}{1000\ mg\ g^{-1}} \times Nm^3\ s^{-1} \qquad = \frac{50}{1000} \times 1.0389 = 0.052\ g\ s^{-1}$$

A.T.F. Mechanical Services

34-0404-2 06.05.04

D1 calculations for Clean Air Stacks

Client:- Ancient House Press (MEGTEC Dual Dry TNV 9.1 Integrated)

These calculations are based on HMIP Technical Guidance Note (Dispersion) D1

1.0 Calculating the Pollution Index:

$$\textbf{Pollution index, } P_i = \frac{D}{(G_d - B_c)} \times 1000$$

where,

D is the discharge rate of the pollutant, in g s^{-1}

G_d is the guideline concentration of the discharged pollutant, in mg m^{-3}

B_c is the background concentration of the discharged pollutant for a particular district/area, or its equivalent, B_e, in mg m^{-3}

Note that P_i then has units of m^3 s^{-1}

1.1 for Carbon Monoxide (CO):

Known information:-

Exhaust volume = 3,740 Nm^3 h^{-1} (maximum)
CO concentration = 100 mg Nm^{-3} (from manufactures)
G_d from Table 1 = 57 mg m^{-3}
B_c from Table 2 = 0 mg m^{-3} (No value given so take as zero)

First, convert Nm3 h^{-1} to Nm3 s^{-1}

$$Nm^3\ s^{-1} = \frac{Nm^3\ h^{-1}}{3600\ s\ h^{-1}}$$

$$Nm^3\ s^{-1} = \frac{3,740}{3,600} = 1.0389$$

Next, calculate D g s^{-1}

$$D = \frac{mg\ Nm^3}{1000\ mg\ g^{-1}} \times Nm^3\ s^{-1} = \frac{100}{1000} \times 1.0389 = 0.10389\ g\ s^{-1}$$

Next, calculate P_i

$$P_i = \frac{0.052 \times 1000}{(0.20 - 0.12)} = \frac{0.052 \times 1000}{0.08} = \mathbf{650}\ m^3\ s^{-1}$$

Now calculate the combined P_i (see 4.5.2)

P_i combined = 1.1 + 1.2 + 1.3 = **1.823 + 1.04 + 650**

P_i = 652.863 therefore use **655** $m^3\ s^{-1}$

2.0 Calculating the Discharge Stack Height (see section 5.0)

2.1 Calculate U_b

First, calculate the Heat Release Q

$$\mathbf{Q = \frac{V\ (\ 1 - 283*/T_d\ )}{2.9}\ (MW)}$$

where,

V is the total volume rate of discharge of gases, in $m^3\ s^{-1}$, at the discharge conditions,
T_d (K) is the temperature of the discharging gases.
* The ambient temperature is assumed to be 10°C (283K)

Known information:-

T_d = 380°C + 273 = 653K
V = 1.0389 s^{-1} (as this volume is measured at 273K, it must be adjusted for 653K)
Using "The Universal Gas Law" $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$, assuming that $P_1 = P_2$ then,

$V_2 = \frac{T_2}{T_1} V1$ therefore $V_2 = \frac{653}{273} \times 1.0389 = 2.485\ m^3\ s^{-1}$

$$Q = \frac{2.485\ (\ 1 - 283/653)}{2.9} = \frac{2.485\ (\ 1 - 0.4334)}{2.9} = \frac{2.485 \times 0.5666}{2.9} = 0.4855$$

Q = 0.4855 MW

Using table Figure 2 plot MW (0.4855) against P_i (655)
This gives a value for **U_b of 2.2 m**

2.2 calculate **U_m**

First, calculate the discharge momentum **M** ($m^4 s^{-2}$)

$$\mathbf{M} = \frac{\mathbf{283}}{\mathbf{T_d}} \cdot \mathbf{V} \cdot \mathbf{w}$$

where,

V is the volume rate of discharge, in $m^3 s^{-1}$, at the discharge temperature
w is the discharge velocity in $m s^{-1}$
T_d is the discharge temperature in K

Known information:-

V = 1.0389 $Nm^3 s^{-1}$ (from 2.1 above) adjusted for temperature = 2.485 $m^3 s^{-1}$
T_d = 653 K (from 2.1 above)
Diameter of clean air stack (DN450) 445 mm internal diameter
a, the cross sectional area of the clean air stack = 0.1556 m^2

To calculate w use $\frac{V\ m^3\ s^{-1}}{a\ m^2} = m\ s^{-1}$

$$w = \frac{2.485}{0.1556} = 15.97\ m\ s^{-1}$$

$$\mathbf{M} = \frac{283}{653} \times 2.485 \times 15.97 = \mathbf{17.20\ m^4\ s^{-2}}$$

Using table Figure 4 plot P_i (655) against M (13.68)

U_m = 3.2 m

Note: Minimum discharge velocity, related to heat release, is as follows:-

For heat release below 0.1MW 10m s^{-1}
For heat release above 1.0MW 15m s^{-1}
For heat release between 0.1MW and 1.0MW pro rata

Calculate C final corrected discharge height, corrected for nearby buildings

As the building is a low wide building, the table Figure 7 can be used.

U = uncorrected discharge stack height, the lesser of U_m or U_b
H = Building height at ridge (m)
A = U_m/U_b
C = final corrected height of stack

Known information:-

H = 6.3m (from measurement)
U_m= 3.2m (from 2.2 above)
U_b = 2.2m (from 2.1 above)

A = U_m/U_b = 3.2 /2.2 = 1.45
U = 2.2 (the lesser of U_m and U_b)
U/H = 2.2/6.3 = 0.35

Using Figure 7 plot U/H (0.35) against A (1.45)
This gives a value of 1.34 for C/H
C = 1.34 x H = 1.34 x 6.3 = 8.44 (minimum height recommendation ridge + 3.0m)

C 9.3m

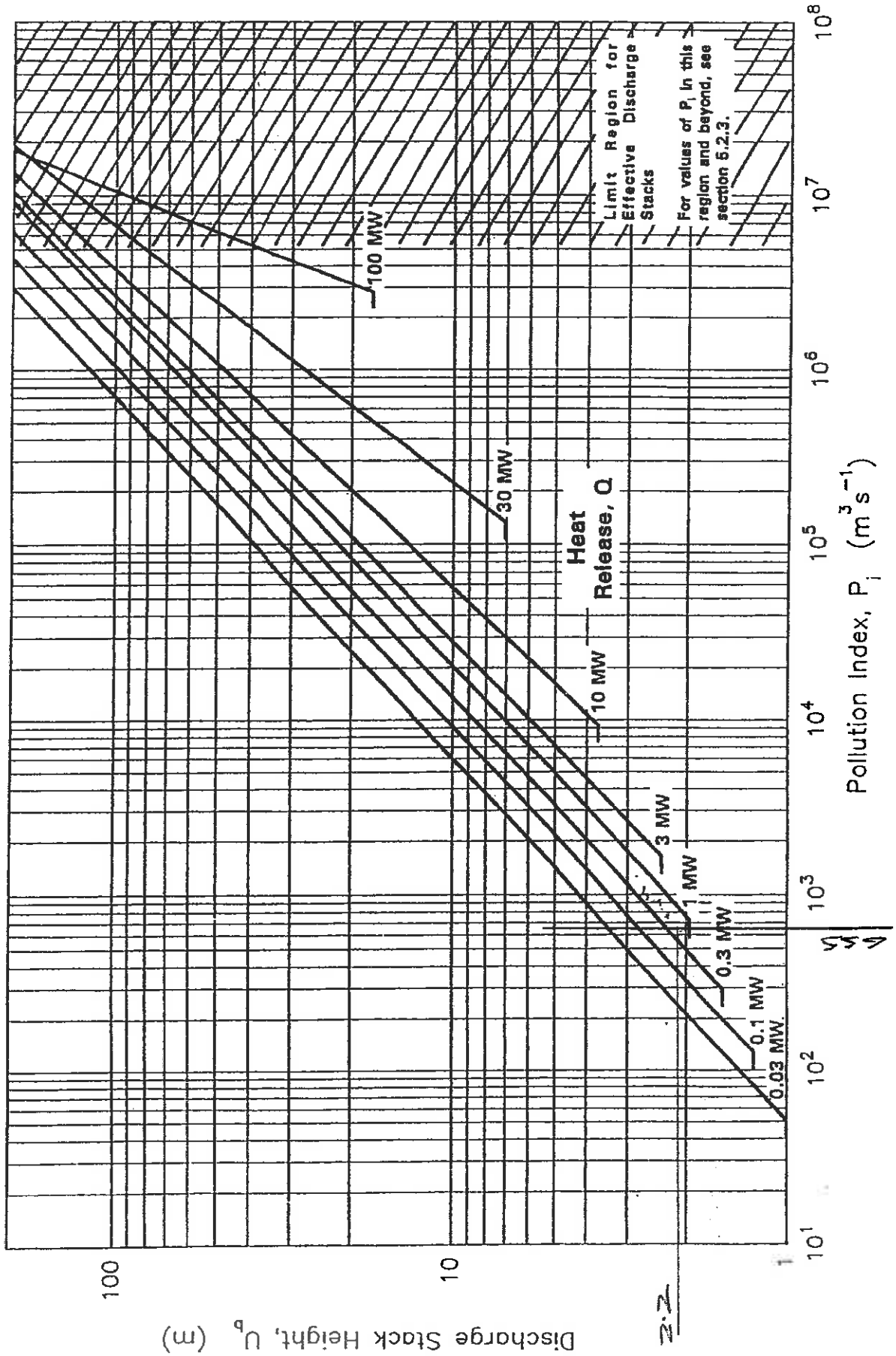


Figure 2 Uncorrected Discharge Stack Height, U_b, from P_i and Heat Released at Discharge Stack Exit

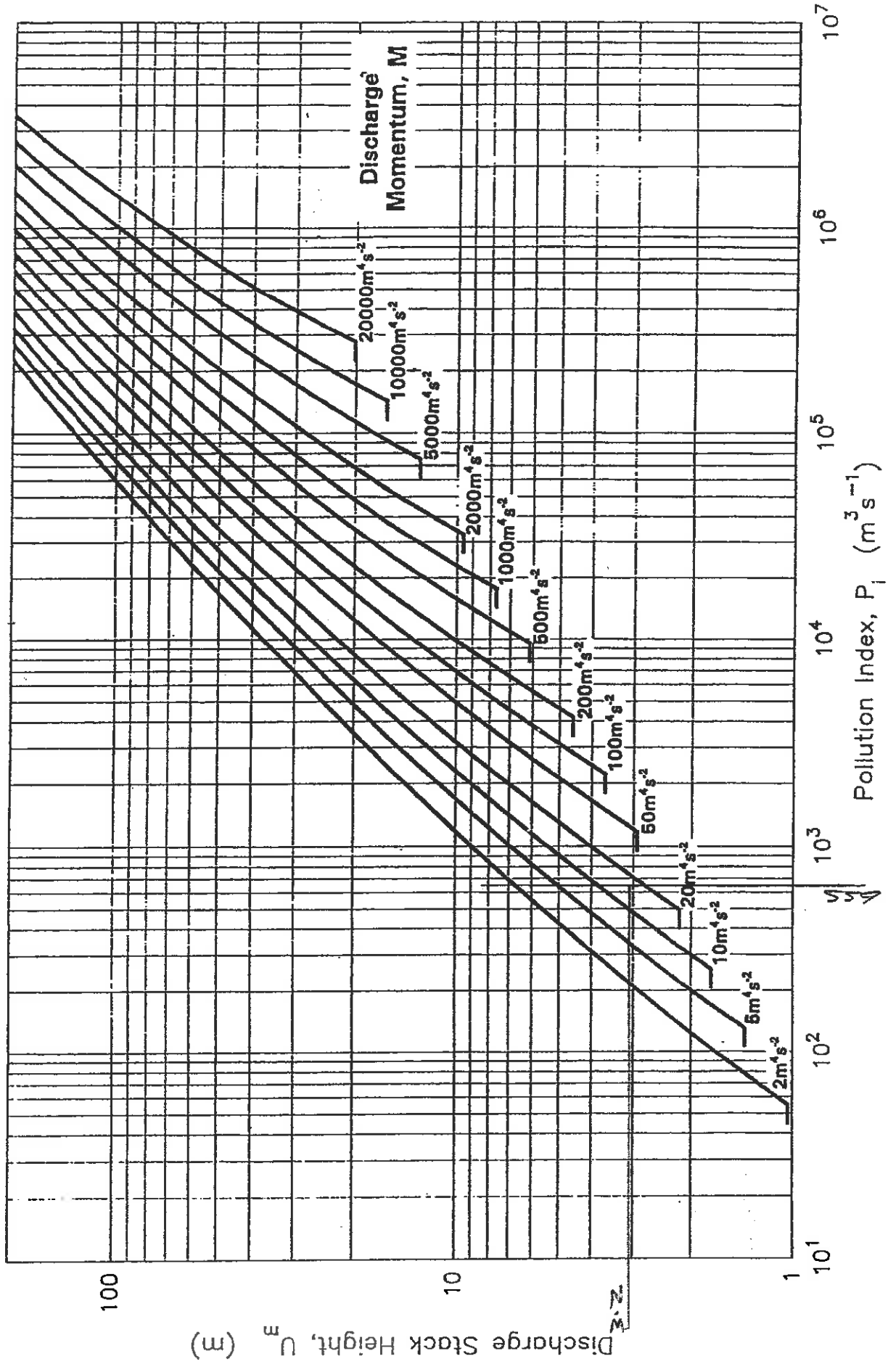


Figure 4 Uncorrected Discharge Stack Height, U_m, from P_i and Discharge Momentum

Our ref: VA/LS

Your ref:

Please ask for: Mrs V Addy

Direct Dial: 01473 433117

Email: varuna.addy@ipswich.gov.uk

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Ancient House
8 Whittle Road
Hadleigh Road Industrial Estate
IPSWICH
IP2 0HA

20th July 2009

Dear Mr Mayhew

Pollution Prevention and Control Act 1999
The Environmental Permitting (England and Wales) Regulations 2007
Solvent Emissions Directive

Further to an inspection carried out by Mr Andrew Oswald and myself on 7th July 2009, the operation of your permitted activity was found to be satisfactory at the time of our visit.

A few queries were raised, some in relation to the installation of the new press. These are summarised below;

- We asked that you supplied the solvent inventory in kilogrammes rather than in litres. ✓ ok. done
- We also asked that you let us know how much ink is used by the Mitsubishi press. ~15,000 kg/yr.
- We requested that you provided the waste carrier certificate from the Environment Agency. ✓ J & G Envi ok.
- There was some uncertainty regarding the height of the current stack. The permit states that the height is 9.3m and we would appreciate confirmation whether this figure is correct or not. D1 says 9.3M. ~~new D1 to follow~~
- We understand that the D1 calculation is being replicated from the existing one onto the new stack. We requested that the stack height calculation for the new stack is submitted as part of the application for variation. now D1 to follow
- It was decided that the new machine would be monitored twice at 6 monthly intervals (November/December 2009 then May/June 2010). Please submit the monitoring results as they become available. The current monitoring results from the supplier of the new press was requested. monit results for late Nov/ early Dec to come through

- There was some discussion regarding whether the heat web and sheet fed presses are to be considered as technically linked or not. We asked you to inform us of your views on this matter.

Please retain this letter in your records on site for a minimum of two years.
I look forward to receiving your application and the information requested above.

Please feel free to contact me if you have any queries.

Yours sincerely

Mrs Varuna Addy
Senior Environmental Health Assistant
Pollution Services

VPA To check tech link defn ↓ Checked. Doesn't matter as it is link bet coating & printing [illegible] They don't coat.

Ancient House – Check visit made with Andrew Oswald on 07.07.09. Met with Edwin Mayhew (of Ancient House) and Peter Darnell (of Levington labs)

3 presses currently on site; 2 sheet fed (a Mitsubishi Diamond 3000TP, and a KBA Rapida 105) and 1 ht set (Komori system 385). Site being prepared for new press at time of visit. The application form for variation was being prepared too.

The transfer of work will take 6months to 2 years with the old KBA sheet fed press being sold off at the end of the transfer period. The new press is a second hand machine and will be very similar to the Komori press.

The heat set press falls under the SED but the sheet fed press doesn't. Both types of press work independently of each other as they are not technically linked although there is a small crossover between the 2. Ancient House to inform us if they want the presses to be considered as linked or not when they apply. If not linked, the amount of ink used will have to be looked at.

Doesn't appear to be tech linked although VPA to get defn.

The komori uses 130T of ink of which 30% is solvent.

The Mitsubishi and KBA share a supply and 40-60% of the ink goes to the Mitsubishi. AH were asked to let IBC know how much ink goes to the Mitsubishi press to enable a decision about the permit variation. 45,000kg/yr.

The stack out of the Komori is at 360degrees C making it hard to monitor for VOCs and PM at that location.

A temperature limit of 775 degrees C is present in the permit -- AH confirmed that this was the manufacturer's recommendation.

The gas-fired oven on the komori is 9m long and includes an afterburner which recycles the hot air to dry the ink. This system will be on the new press too. Each of the heat set presses will have their own stack.

If the temperature on the burner varies too much the system cuts out.

The new machine will be on site last week of July with installation on the 20th of August. AO advised that the new machine will be monitored twice at 6 monthly intervals (Nov/Dec then May/June). AH was requested to get the current monitoring results from the supplier. IBC will decide if annual monitoring will be required thereafter. ✓

Ask AH if current/prev. monit results avl → only needed if comparable monit measures to be taken.

It was agreed that the frequency of monitoring for the existing would remain the same and that there was no need for continuous monitoring based on the existing results.

The D1 calculation is being replicated on the new machine from the existing one. It was unsure whether the current height is 9.3m. AH to check and advise. AH was asked to include info on the stack height in the new application.

AO went through the SED options. AH said that in 2006, they used 33% VOC and in 07-08 this was 31% which showed a reduction in their VOC consumption. This also meant that the % solids in the solvents increased.

The solvent is not recovered but reclaimed from rags etc.

AO mentioned that the VOC limit should be 20mg/m3 due to the age of the afterburner. New burner is 2005 and exisiting is 2004. **The permit should be varied to reflect this.**

VPA to check

AO asked for the solvent inventory to be supplied in kg rather than L. ✓

AO asked for the waste carrier certificate from the EA. ✓

AH asked that IBC revised condition 21 of existing permit in varied permit.

Heat set press.

1 Nov 07 → 31 Oct 08 Solvent content = 49,665 kg

1 Dec 06 → 30 Nov 07 " = 49,927 kg

Take Note when issuing permit

Mr E. Mayhew Ancient Press 8 Whittle Road Hadleigh Road Industrial Estate Ipswich IP2 OHA	**Our ref** 6.4/RJD/4/05 **Contact** **Direct Dial** **E-mail**

20th January 2009

Dear Mr Mayhew

ENVIRONMENTAL PERMITTING REGULATIONS 2007
ANCIENT PRESS, 8 WHITTLE ROAD, HADLEIGH ROAD INDUSTRIAL ESTATE
LOCAL AIR POLLUTION CONTROL INSPECTION

An inspection of the above installation was carried out on 20th January 2009. The following areas require your attention to comply with the conditions of your Permit Ref. No. 7/LJB/9/08.

General
You identified that the permit description incorrectly attributes details of the Komori press and integrated afterburner as a sheetfed offset printing process. Subject to comments made below, your permit will be reviewed and this discrepancy addressed when a revised permit is issued to you.

Conditions 52/53 – Monitoring and consumption of Organic Solvents
Please arrange for a copy of your completed solvent inventory for year ending 31st October 2008 to be submitted to this Authority within two weeks of the date of this letter. The submission will need to summarise in tonnes both your total ink use as well as your organic solvent use over the previous year. For completeness, please also submit the solvent inventory for 2007 at the same time. I request that this information be submitted within 14 days of the date of this letter.

This Authority will assess your submission in the light of changes to the legislation and will contact you with a proposed course of action. This may include varying your permit to incorporate the requirements of the Solvent Emissions Directive.

Conditions 16/18/19 – Continuous emissions monitoring (CEM): Komori system
The current CEM system monitors and records only temperature of the afterburner. The permit requires you to also continuously monitor and record VOC emissions from the afterburner as well ensuring that the plant is fitted with audible and visual alarms to warn of abatement plant failure or malfunction. I will contact you again following review of your solvent inventory to discuss monitoring requirements in more detail.

Please retain this letter, and the accompanying risk rating, in your records at the inspected installation for a minimum of two years.

Thank you for your co-operation. If you require any further information or wish to discuss any of the points raised, please contact me on 01473 433053.

Yours sincerely

Steve Rock

Enc. – risk rating

Permit ref: 6.4/LK/9/07
Please ask for: Mrs Varuna Parsad Addy
Direct dial: 01473 433117
Email: varuna.addy@ipswich.gov.uk

IPSWICH BOROUGH COUNCIL

Mr Mayhew
Ancient House
8 Whittle Road
Hadleigh Road Industrial Estate
Ipswich
IP2 0HA

26.10.09

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Dear Mr Mayhew,

Pollution Prevention and Control Act 1999
The Environmental Permitting (England and Wales) Regulations 2007
Operation of a printing process

I write following our recent conversation when you indicated that the information which we had requested on the 20th July 2009 further to our inspection visit and your application for the new press had been delayed for health reasons.

As I have not received further communication from you since our last conversation, I should be grateful if you could indicate when the above-mentioned would be received. It is important that information regarding the new press is received soon so that we may permit you to operate that process.

I look forward to receiving the information requested as soon as possible.

Please feel free to contact me if you have any queries.

Yours sincerely,

✓ info rcvd now

Mrs Varuna Parsad Addy
Senior Environmental Health Assistant

Your ref: 6.4/LK/9/07
Please ask for: Mrs Varuna Parsad Addy
Direct dial: 01473 433117
Email: varuna.addy@ipswich.gov.uk

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Mr Mayhew
Ancient House
8 Whittle Road
Hadleigh Road Industrial Estate
Ipswich
IP2 0HA

Dear Mr Mayhew,

Pollution Prevention and Control Act 1999
The Environmental Permitting (England and Wales) Regulations 2007
Solvent Emissions Directive

We wrote to you on the 20th July 2009 following our inspection visit and our discussion regarding the new press.

As we have not received communication from you since that time, I should be grateful if you could provide the information requested in the next 14 days.

Please feel free to contact me if you have any queries.

Yours sincerely,

Mrs Varuna Parsad Addy

✓ info rcvd now

Ancient House
8 Whittle Road
Hadleigh Road Industrial Estate
Ipswich
IP2 0HA

Dear Mr Mayhew,

Pollution Prevention and Control Act 1999
The Environmental Permitting (England and Wales) Regulations 2007
Solvent Emissions Directive

Further to our conversation, I understand that Ancient House intends to install a new Komori press that would constitute a variation to your current permit. It is necessary to determine if this variation will count as a 'substantial' variation or as a 'non-substantial' variation. There are specific differences between the two types of variation which lead to differences in the permitting process and whether charges are to be incurred. The Department for Environment, Food and Rural Affairs (DEFRA) has set the fees for a 'substantial' variation at £994. There are no fees for a 'non-substantial' variation.

In order to enable an assessment of the type of variation which your company is proposing, I should be grateful if you could please advise me of the following when you submit your application on the enclosed application form:

- Can you provide an indication of the expected solvent consumption at your installation following the installation of the Komori press? I understand from your solvent inventory that for the past 2 years, your solvent consumption arising mainly/solely from the heatset web offset printing ink has exceeded 40kg per annum. Can you also provide us with an indication of the expected percentage increase or percentage decrease in solvent consumption per annum following the installation of the Komori press?

- Is the commissioning of the new press a replacement of an existing press that will be made redundant? If so, will the installation of the new press increase or decrease the nominal capacity of your installation?

- Will the new press comprise of an integrated after burner to abate exhaust volatile organic compounds?

- What type of printing process will the new press be used for?

- Can you indicate whether you currently use or intend to use VOC-containing substances or preparations assigned one or more of the following risk-phrase substances; R40, R45, R46, R49, R60 and R61? You should be able to find these risk-phrases on the product data sheets.

We will not be requiring any charges from you until we have enough information to determine whether the variation is substantial or not. This determination will be made upon receiving your completed application form and the information required above.

I would strongly recommend that you familiarise yourself with the following guidance from DEFRA:

- Process Guidance Note 6/16(04) – Secretary of State's Guidance for Printing

  Available free to download from:
  http://www.defra.gov.uk/environment/ppc/localauth/pubs/guidance/notes/pgnotes/pdf/pg6-16.pdf

- Additional guidance from the Department for Environment, Food and Rural Affairs and from the Welsh Assembly Government AQ 21(04) - Printing Processes (PG6/16(04))

  Available free to download from:
  http://www.defra.gov.uk/environment/ppc/localauth/pubs/guidance/notes/aqnotes/aq21(04).htm

These documents provide guidance on what constitutes Best Available Techniques and Best Available Techniques Not Entailing Excessive Costs.

I look forward to receiving your application and meeting you on the 7th of July 2009 at 10 am when an inspection under the above legislation will be undertaken.

Please fee free to contact me if you have any queries.

Yours sincerely,

Mrs V.P. Addy

D1 calculations for Clean Air Stacks

Client:- Ancient House Press (MEGTEC Dual Dry TNV 9.1 Integrated)

These calculations are based on HMIP Technical Guidance Note (Dispersion) D1

1.0 Calculating the Pollution Index:

$$\text{Pollution index, } P_i = \frac{D}{(G_d - B_c)} \times 1000$$

where,

D is the discharge rate of the pollutant, in g s^{-1}

G_d is the guideline concentration of the discharged pollutant, in mg m^{-3}

B_c is the background concentration of the discharged pollutant for a particular district/area, or its equivalent, B_e, in mg m^{-3}

Note that P_i then has units of m^3 s^{-1}

1.1 for Carbon Monoxide (CO):

Known information:-

Exhaust volume = 3,740 Nm^3 h^{-1} (maximum)
CO concentration = 100 mg Nm^{-3} (from manufactures)
G_d from Table 1 = 57 mg m^{-3}
B_c from Table 2 = 0 mg m^{-3} (No value given so take as zero)

First, convert Nm3 h^{-1} to Nm3 s^{-1}

$$Nm^3\ s^{-1} = \frac{Nm^3\ h^{-1}}{3600\ s\ h^{-1}}$$

$$Nm^3\ s^{-1} = \frac{3,740}{3,600} = 1.0389$$

Next, calculate D g s^{-1}

$$D = \frac{mg\ Nm^3}{1000\ mg\ g^{-1}} \times Nm^3\ s^{-1} = \frac{100}{1000} \times 1.0389 = 0.10389\ g\ s^{-1}$$

Next, calculate $\mathbf{P_i}$

$$\mathbf{P_i} = \frac{0.13089}{(57 - 0)} \times 1000 = \frac{0.13089}{57} \times 1000 = \mathbf{1.823}\ m^3\ s^{-1}$$

1.2 for total Carbon content (C):

Known information:-

Exhaust volume = 1.0389 Nm s^{-1} (calculated in 1.1)
C concentration = 20 mg Nm^{-3} (from manufacturers)
G_d from Table 1 = 20 mg m^{-3} (assumption as no value given)
B_c from Table 2 = 0 mg m^{-3} (no value given so take as zero)

Next, calculate D g s^{-1}

$$D = \frac{mg\ Nm^{-3}}{1000\ mg\ g^{-1}} \times Nm^3\ s^{-1} = \frac{20}{1000} \times 1.0389 = 0.0208\ g\ s^{-1}$$

Next calculate $\mathbf{P_i}$

$$\mathbf{P_i} = \frac{0.0208}{(20 - 0)} \times 1000 = \frac{0.0208}{20} \times 1000 = \mathbf{1.04}\ m^3\ s^{-1}$$

1.3 for Nitrogen oxides expressed as nitrogen dioxide (NO_2):

Known information:-

Exhaust volume = 1.0389 Nm s^{-1} (calculated in 1.1)
C concentration = 50 mg Nm^{-3} (average figure)
G_d from Table 1 = 0.20 mg m^{-3}
B_c from Table 2 = 0.12 mg m^{-3} (highly developed large urban area)

Next, calculate D g s^{-1}

$$D = \frac{mg\ Nm^{-3}}{1000\ mg\ g^{-1}} \times Nm^3\ s^{-1} = \frac{50}{1000} \times 1.0389 = 0.052\ g\ s^{-1}$$

Next, calculate $\mathbf{P_i}$

$$\mathbf{P_i} = \frac{0.052 \times 1000}{(0.20 - 0.12)} = \frac{0.052 \times 1000}{0.08} = \mathbf{650}\ m^3\ s^{-1}$$

Now calculate the combined $\mathbf{P_i}$ (see 4.5.2)

$\mathbf{P_i}$ combined = 1.1 + 1.2 + 1.3 **= 1.823 + 1.04 + 650**

$\mathbf{P_i}$ = 652.863 therefore use **655** $m^3\ s^{-1}$

2.0 Calculating the Discharge Stack Height (see section 5.0)

2.1 Calculate $\mathbf{U_b}$

First, calculate the Heat Release **Q**

$$\mathbf{Q = \frac{V\ (1 - 283*/T_d)}{2.9}\ (MW)}$$

where,

V is the total volume rate of discharge of gases, in $m^3\ s^{-1}$, at the discharge conditions,
T_d (K) is the temperature of the discharging gases.
* The ambient temperature is assumed to be 10°C (283K)

Known information:-

T_d = 380°C + 273 = 653K
V = 1.0389 s^{-1} (as this volume is measured at 273K, it must be adjusted for 653K)
Using "The Universal Gas Law" $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$, assuming that $P_1 = P_2$ then,

$$V_2 = \frac{T_2}{T_1} V1 \quad \text{therefore } V_2 = \frac{653}{273} \times 1.0389 = 2.485\ m^3\ s^{-1}$$

$$Q = \frac{2.485\ (1 - 283/653)}{2.9} = \frac{2.485\ (1 - 0.4334)}{2.9} = \frac{2.485 \times 0.5666}{2.9} = 0.4855$$

Q = 0.4855 MW

Using table Figure 2 plot MW (0.4855) against P_i (655)
This gives a value for **U_b of 2.2 m**

2.2 calculate **U_m**

First, calculate the discharge momentum **M** ($m^4\ s^{-2}$)

$$\mathbf{M} = \frac{\mathbf{283}}{\mathbf{T_d}} \mathbf{.\ V\ .\ w}$$

where,

V is the volume rate of discharge, in $m^3\ s^{-1}$, at the discharge temperature
w is the discharge velocity in $m\ s^{-1}$
T_d is the discharge temperature in K

Known information:-

V = 1.0389 $Nm^3\ s^{-1}$ (from 2.1 above) adjusted for temperature = 2.485 $m^3 s^{-1}$
T_d = 653 K (from 2.1 above)
Diameter of clean air stack (DN450) 445 mm internal diameter
a, the cross sectional area of the clean air stack = 0.1556 m^2

To calculate w use $\frac{V\ m^3\ s^{-1}}{a\ m^2} = m\ s^{-1}$

$$w = \frac{2.485}{0.1556} = 15.97\ m\ s^{-1}$$

$$\mathbf{M} = \frac{283}{653} \times 2.485 \times 15.97 = \mathbf{17.20\ m^4\ s^{-2}}$$

Using table Figure 4 plot P_i (655) against M (13.68)

U_m = 3.2 m

Note: Minimum discharge velocity, related to heat release, is as follows:-

For heat release below 0.1MW 10m s^{-1}
For heat release above 1.0MW 15m s^{-1}
For heat release between 0.1MW and 1.0MW pro rata

Calculate **C** final corrected discharge height, corrected for nearby buildings

As the building is a low wide building, the table Figure 7 can be used.

U = uncorrected discharge stack height, the lesser of U_m or U_b
H = Building height at ridge (m)
A = U_m/U_b
C = final corrected height of stack

Known information:-

H = 6.3m (from measurement)
U_m= 3.2m (from 2.2 above)
U_b = 2.2m (from 2.1 above)

A = U_m/U_b = 3.2 /2.2 = 1.45
U = 2.2 (the lesser of U_m and U_b)
U/H = 2.2/6.3 = 0.35

Using Figure 7 plot U/H (0.35) against A (1.45)
This gives a value of 1.34 for C/H
C = 1.34 x H = 1.34 x 6.3 = 8.44 (minimum height recommendation ridge + 3.0m)

C 9.3m

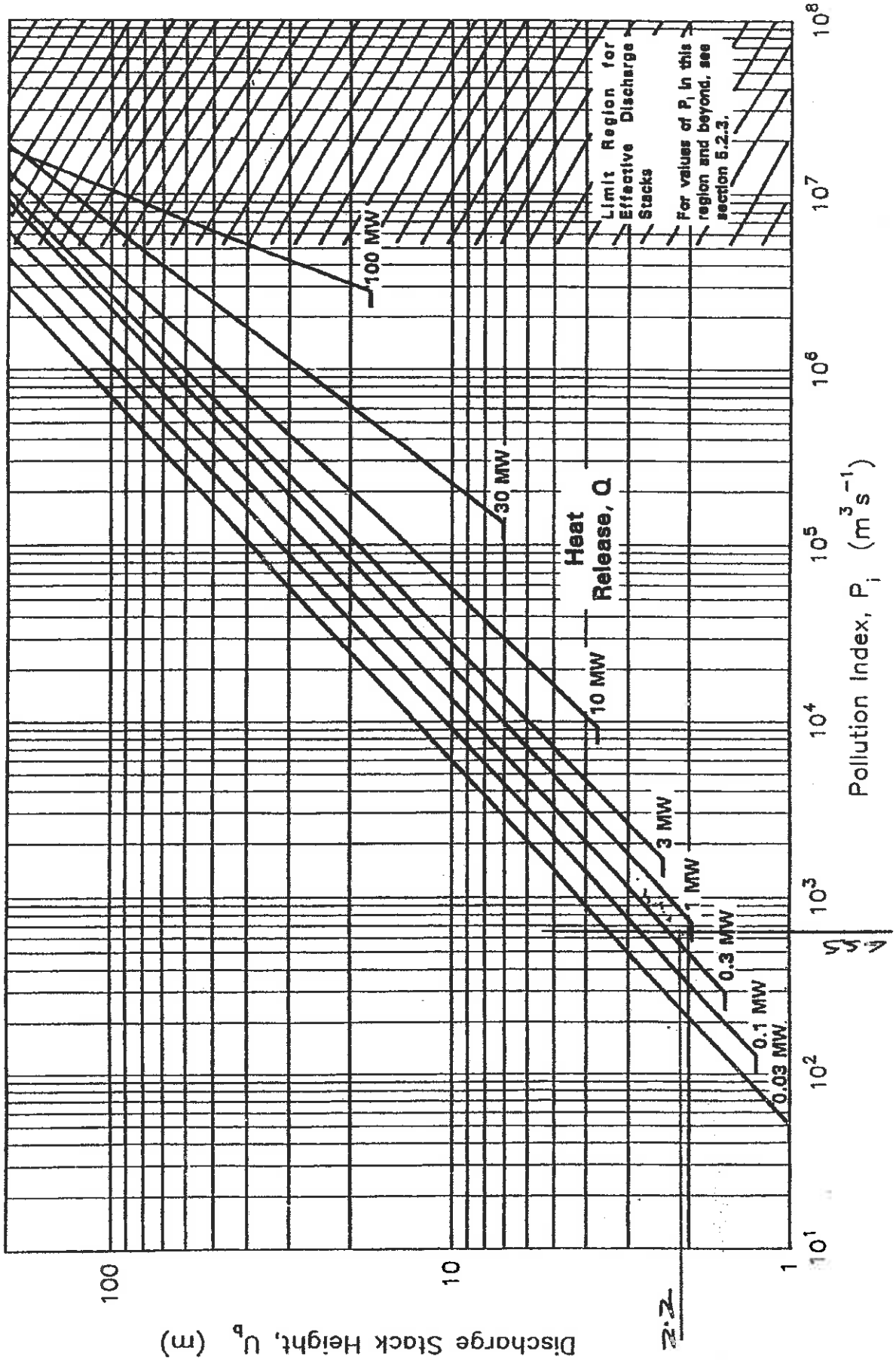


Figure 2 Uncorrected Discharge Stack Height, U_b, from P_i and Heat Released at Discharge Stack Exit

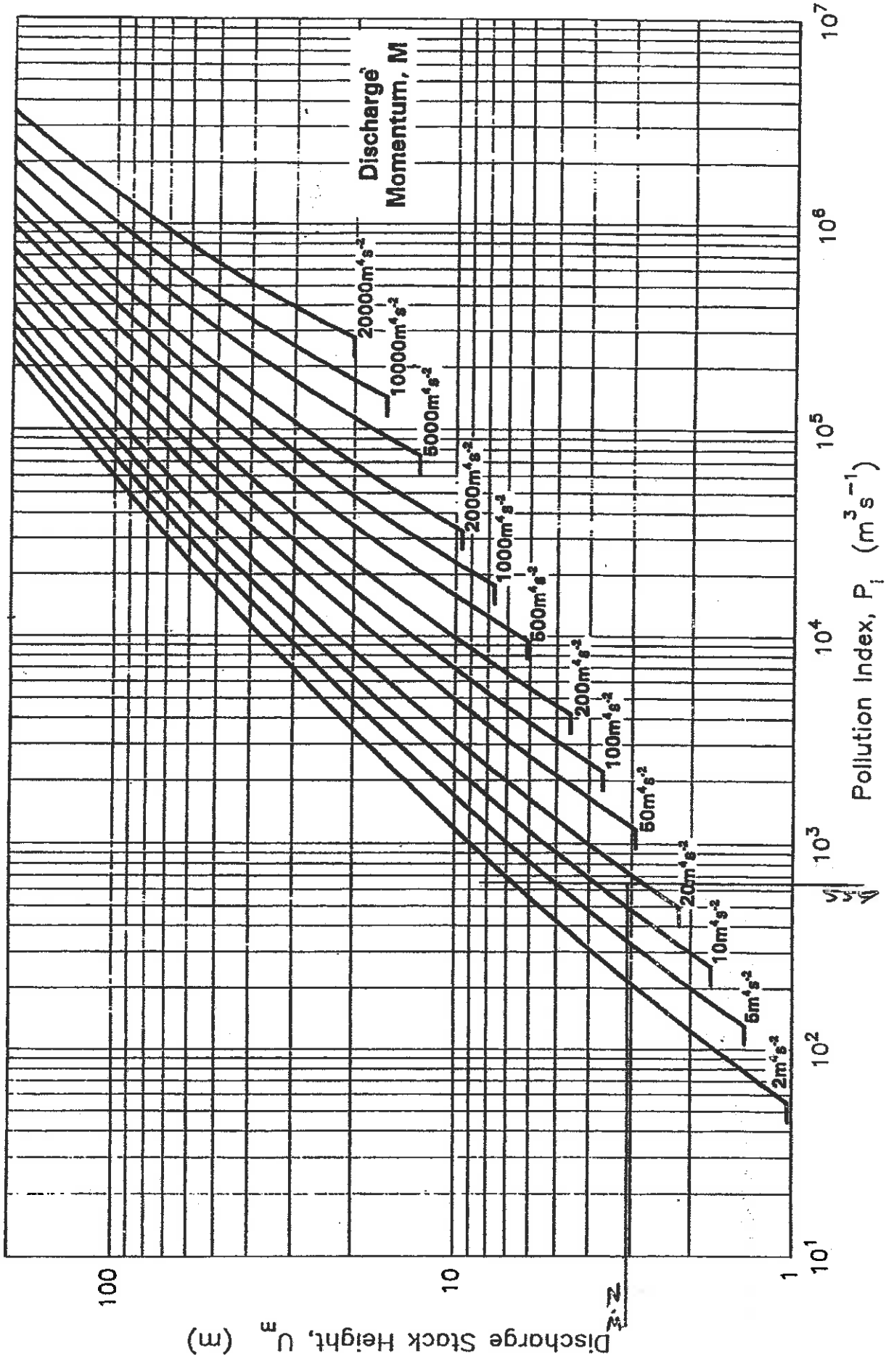
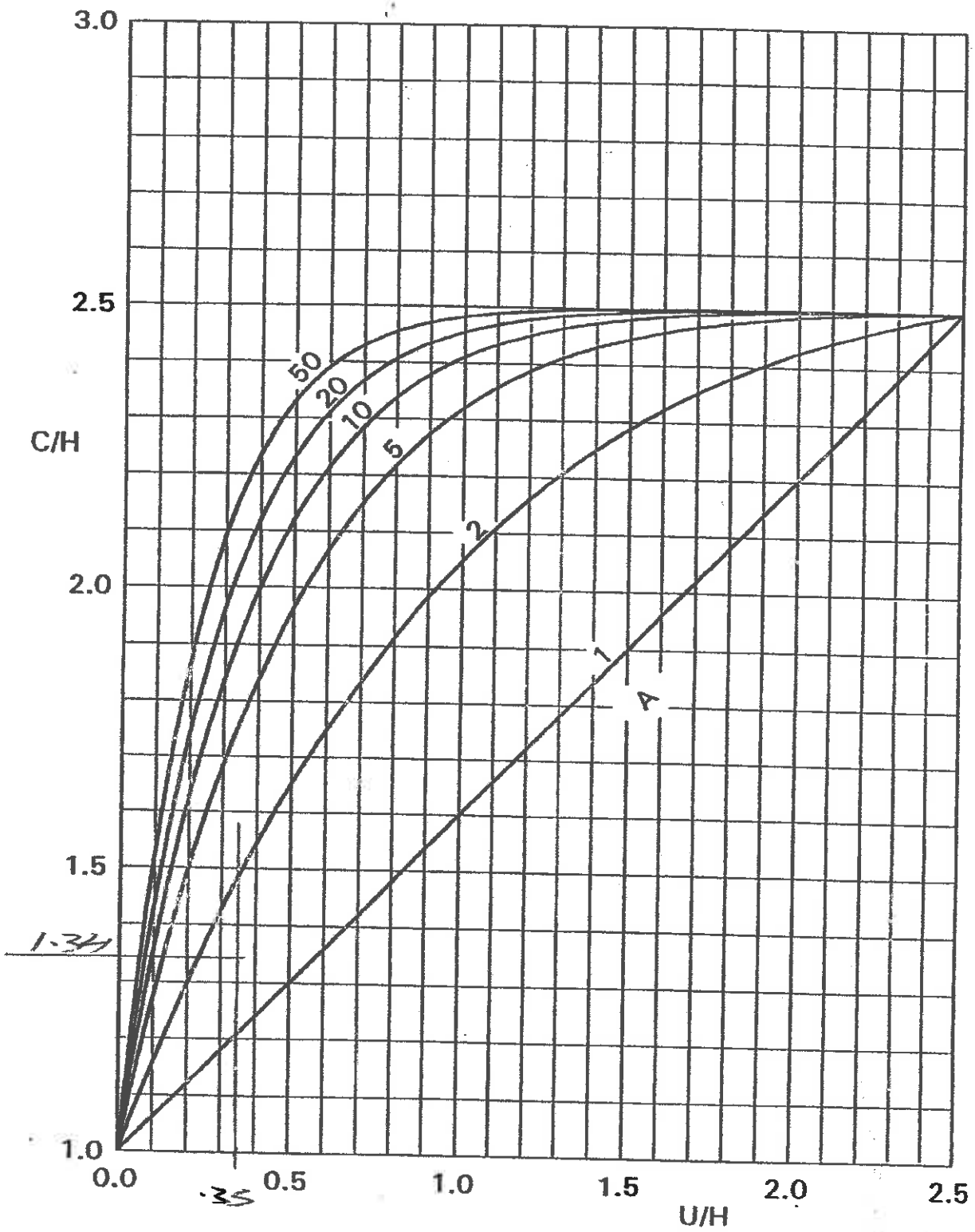


Figure 4 Uncorrected Discharge Stack Height, U_m, from P_i and Discharge Momentum

Figure 7 Discharge Stack Height Correction for Low, Wide Buildings
($H_m/T_m \leq 0.4$, Eqn. 17)



Ancient House Printing Group

Ancient House EPA Draft Variation Application

- **Company details**

Ancient House Press Ltd, Whittle Rd, Hadleigh Rd Industrial Estate, Ipswich, IP2 0HA

- **Location of new plant**

The new plant is located in the main building at above site. The chimney, marked on the plan, is at a height of approximately 7m, and has a short 90°cowl pointing towards the front (East) of the building.

- **Description of New Process**

The process comprises a new KBA Rapida 105 sheet fed web offset double-sided 10 colour printing press, with a capacity to print a maximum of 12000 pages per hour. It normally runs at 8-9000 pages per hour.

The press is situated in the open factory and there are no enclosures around the printing units. However, at the 'outlet end' of the press, the palleting unit houses 6 infra-red heating elements which heat the printed sheets to between 30 & 35°c to aid the ink setting. Warm air emissions from the unit are vented unabated to atmosphere, via a short 300mm diameter stainless steel stack, directly through the factory roof via a 90° cowl. This extract system has an integral variable speed fan, which is normally set to run at maximum speed. Anti set-off powder containing starch, is also applied at this stage of the process to prevent the printed sheets sticking together.

The inks used in the process are of the conventional type, currently Stehlin & Hostag low-tack Eco Intensive 'sheet fed offset' ink (typical product code 41FW8008). The same ink is now used on the Heidelberg 8-colour press. The inks are vegetable oil based with a typical boiling range of 280 – 300°c. They do not contain any VOC's as the oil has a vapour pressure of less than 0.2kPa.

The new press is a direct replacement for the old Heidlberg 102-5FP 5-colour sheet fed press. The old press used Stehlin & Hostag heat set inks which had a significant solvent content, typically 30% petroleum distillate with a boiling range 240-290°C. However, this was not classified as a volatile organic compound, as it has a very low vapour pressure, i.e. less than 0.2kPa. The new inks and the automated transfer system are likely to have a positive environmental effect.

- **Details of operation of plant**

The inks are fed directly to the press under pressure, via a totally enclosed piped system from 200kg drums. The ink troughs on the press have an automated control system to maintain a constant level.

The fount solution is also supplied by an automated system, which doses reverse osmosis deionised water with 3% iso-propanol.

The clean-down between print runs is carried out using an auto-roll wipe system, which minimises the use of cleaning solvents. The solvent used is Ultrachem Primawash 55, which

contains petroleum distillate & white spirit. Bottcherin 60, containing de-aromatised aliphatic hydrocarbon solvent, is used for manual cleaning. Premiere Chemicals MEK substitute is also used in small quantities for manual cleaning. Used wipes from automated and manual cleaning operations are stored in lidded drums beside the line prior to controlled disposal.

- **Details of monitoring so far carried out**

Monitoring of emissions was carried out on 15th October 2002. The purpose of the test was to determine whether any volatile organic compounds were being emitted from the stack on the new KBA press. Full details are given in Levington Laboratories Test Report W390304. Total hydrocarbon emissions were measured at 50mg carbon per normal cubic meter of exhaust air or 52g carbon per hour.

However, it should be noted that approximately 80% of these emissions were iso-propanol (ipa) from the fount solution. This equates to 83mg/Nm3 or 34ppm of iso-propanol (ipa). To put this in context, the Occupational Exposure Limit for 8-hour personal exposure in the workplace to ipa is 400ppm (H40/2002). The quantity being emitted is therefore only 8.5% of that which employees are permitted to breath, and should therefore be considered to be trivial, and additional abatement is not required.

On this basis, only 20% of the emissions are hydrocarbons from the ink or cleaning solvents, i.e. 10mgC/Nm3, and the ink derived portion is not classified as a VOC because of its low vapour pressure.

- **Justification for chimney height**

The iso-propanol solvent emitted from the process has very low odour, and an odour threshold of 0.7mg/m3. As the concentration is only 8.5% of the occupational exposure limit, the existing stack should be considered sufficient to disperse any vapour. The stack, as built, is the standard installation used by the KBA, the press manufacturers throughout Europe. Because of the location of the stack, it would be almost impossible to increase its height without substantial modification to the roof and support structure.
The stack height calculation is appended for information.

- **Details of relevant operator training**

The press is operated on a three-shift basis by two of seven operators. These have all had one weeks training in Germany with the manufacturers, and a further one month 'on the job training' during installation and commissioning

- **Throughput of organic solvent**

The organic solvents used in the process are the fount solution - isopropanol, and the cleaning solvents, mainly Bottcherin 60 & Orange. The fount solution is used at a concentration of 3%, well below the maximum of 5%, stipulated in the process guidance note for new installations.

The predominant solvent consumption of the old and new presses are as follows:

Press	IPA	Bottcher 60/Orange	Total
Old 5 colour	5,900 litres/annum	5,900 litres/annum	11,800 litres/annum
New 10 colour	7,020 litres/annum	3,900 litres/annum	10,920 litres/annum

It should be noted that the information for the new press is based on 3 months data only.

- **Details of emissions / throughput of previous press**

The old press 5-colour press had no fume extraction system or external discharge, so no emission checks were made. Ink and cleaning solvents and fount solutions were allowed to evaporate in the room. However, vapour levels were tested so part of the COSHH assessment in July 2001. Measurement of organic vapours was carried out around the press, and results of less than 10ppm hydrocarbons and 50 to 80ppm iso-propanol were measured around the press. These results represent 10 to 20% of the occupational exposure limit. Full details are given in Levington Laboratories Test Report W390220.

From the table above it can be seen that the total of the two main solvents used on each press is approximately the same.

- **Other relevant details.**

In terms of the effect of the site on air pollution, there is no significant increase with the replacement of the press. The reduction in the operating concentration of the iso-propanol fount solution may well improve the situation over time.

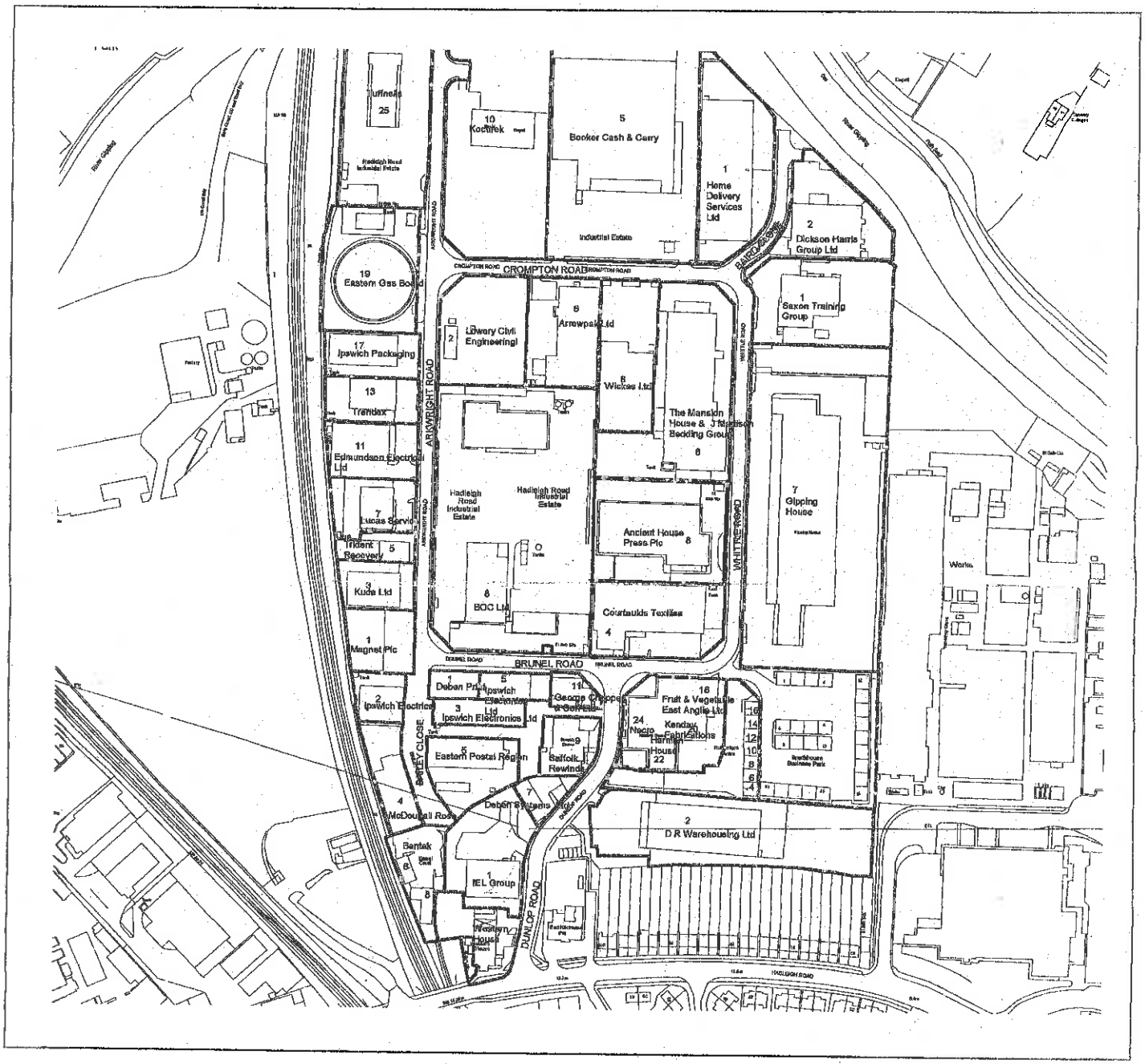
The Environment Agencies document, IPPC: A Practical Guide, Version 1, 8/2002, has been consulted. This defines the term 'Substantial Change'. Using this as a guide, the process would appear to satisfy the requirements of paragraphs a, b & c under Release of Substances. The same substance is released is the same quantity and the same form. The only difference is that the process now has an external stack, as opposed producing fugitive emissions. On this basis it should not be classified as a substantial change.

Location - Hadleigh Road Industrial Estate

Scale - 1 :2600

Date - 19.10.98

IPSWICH

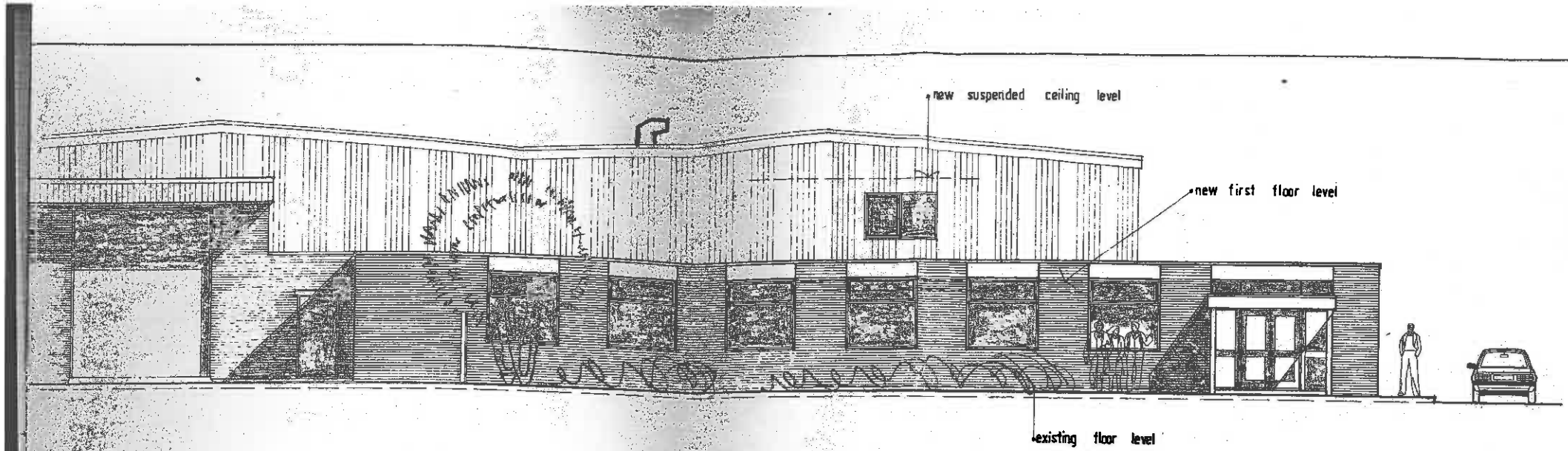


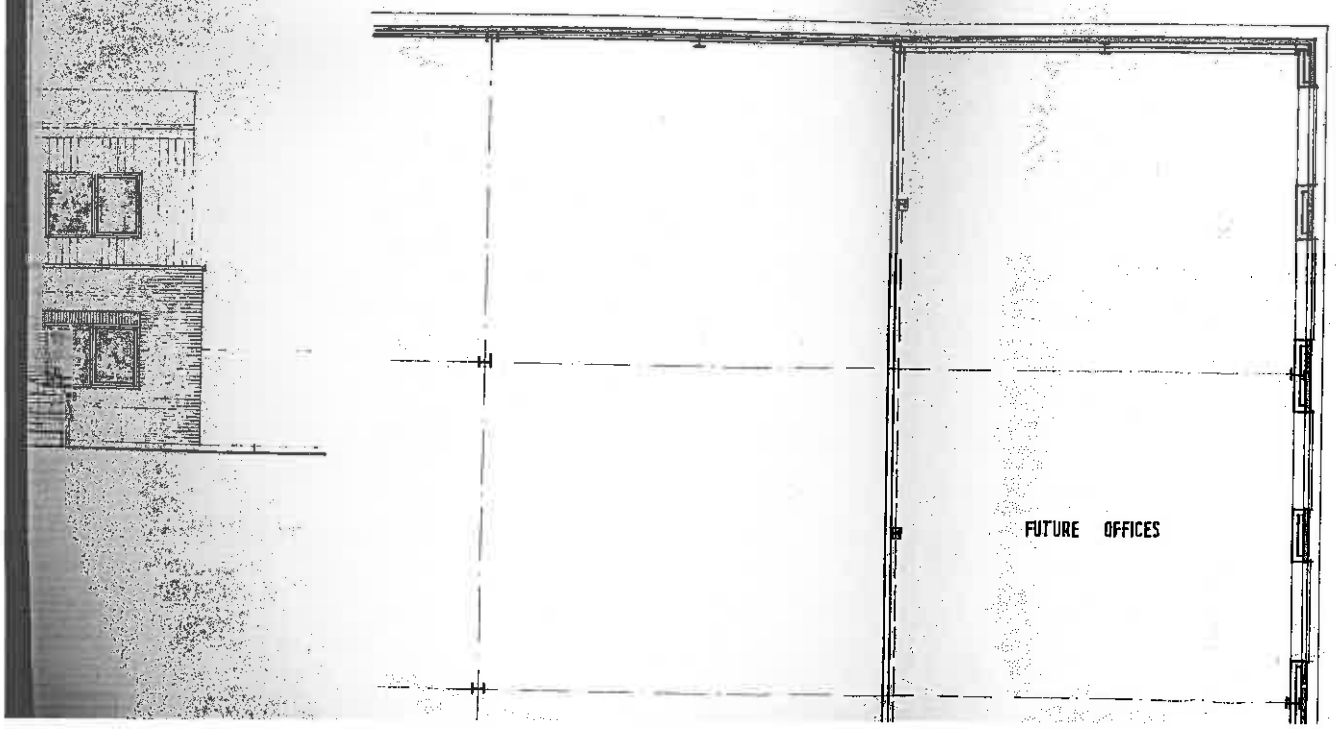
Local Authority BUILDING CONTROL

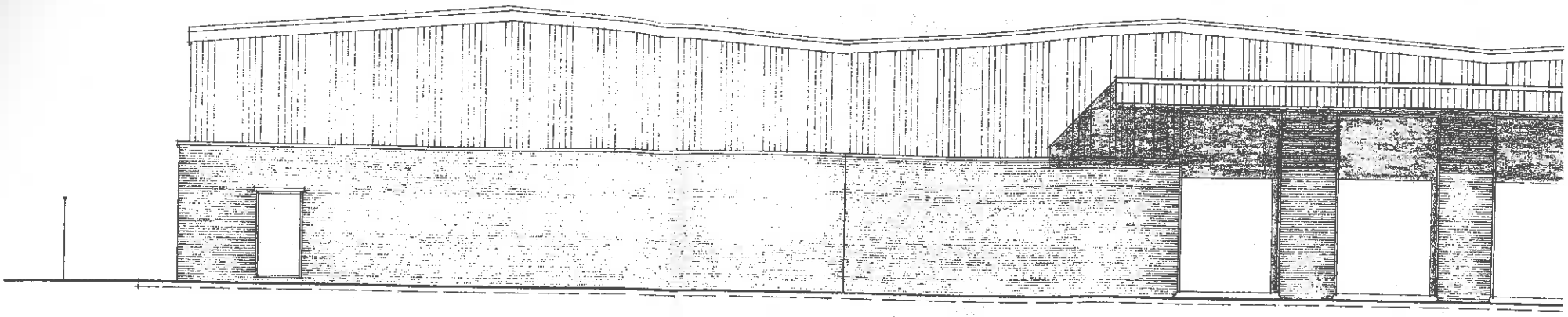
IPSWICH BUILDING CONTROL
CIVIC CENTRE
CIVIC DRIVE
IPSWICH
IP1 2EE
TEL: 01473 262969

N
W E
S

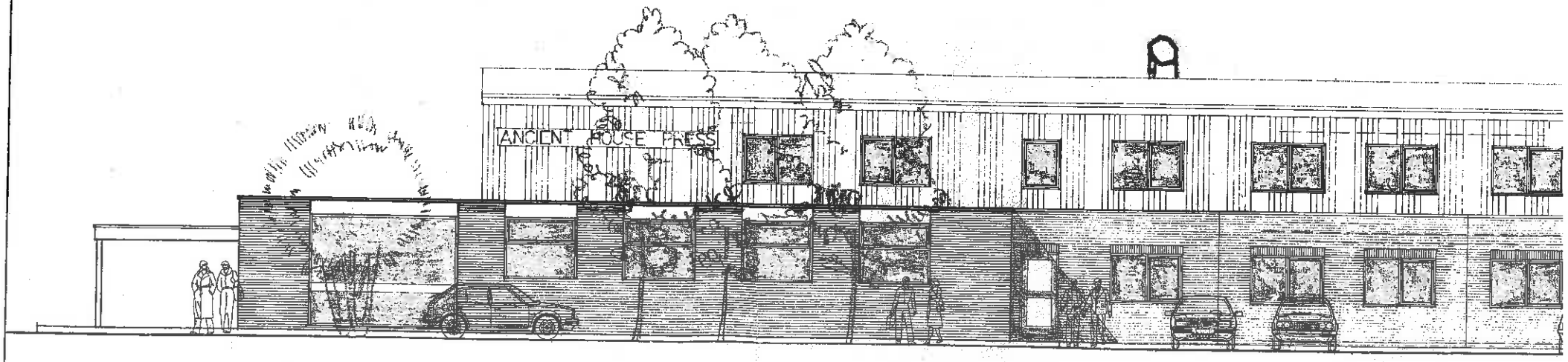
KBA Press
Position of Roof Duct.
BOILER ROOM
WIRE-LESS OFFICE
STORAGE
ELECTRICS
DIRECTORS/ MANAGERS
PRE-PRESS SYSTEM ROOM
C.T.P. PLATEMAKING/ PLANNING
SCANNER ROOM
ACCOUNT MANAGERS/ESTIMATORS/COMMERCIAL
partitions etc removed
TEA PREP
STORAGE
PRE-PRESS PLANNING
MEETING ROOM
new door LOBBY
LOBBY
CLEANER
LOBBY
LOCKER ROOM
RECEPTION
MALE
FEMALE
MALE
KITCHEN
STAFF FACILITY
PRODUCTION MANAGER


new suspended ceiling level
new first floor level
existing floor level


FUTURE OFFICES



SOUTH ELEVATION



EAST ELEVATION

Stack Height Calculation	**Site:**	**Ancient House**		**Date:**	12/2002		
ex HMIP Guidance Note D1							
Enter values in boxed locations only							
Pollution Index P =	D	x1000	= discharge rate g/s				
from equation (1)	(Gd-Bc)		guide - background conc mg/m3				
	at stack temp		**at STP**				
Gas velocity = w m/s	5		**4.4**				
Temp = td°c	35	td °K =	**308**				
Stack dia. @ outlet = d m	0.4						
Area m2	**0.1257**						
		m3/hr		Nm3/h			
Volume flow rate = V m3/s	**0.6284**	2262	**0.5570**	**2005**			
			Solvent	IPA			
VOC conc. of flue gas = cd mg/Nm3	50	**(as C)**	C atoms	3			
	83	as solvent	Mol w t	60			
Discharge rate = D mg/s atstp	**46.4**						
= VOC conc x vol. flow rate at stp							
	ppm	mg/m3					
Odour threshold	0.3	**0.75**					
Size of odour discharge	**61.9**	odour units					
= discharge rate/odour threshold							
Pollution index Pi =	**619**	m3/s					
Heat Release Q =	V(1-283/t)						
from equation (3)	2.9						
Q =	**0.0175884**	MW					
Discharge momentum M =	283 V w		**Minimum Height**				
for equation (11)	td		from equation (16)				
M =	**2.89**	m4/s2	Um min =	**1.15**	m		
Uncorrected Chimney Height	Ub	boyancy					
from equation (6) Ub =	10^a.Pi^b	a	b				
if Q<1MW		**-0.7765932**	**0.4812261**				
Ub calc =	**3.69**	m					
if Q<1MW equation (7) Ub min =	**0.90**	m					
Ub =	**3.69**	m	greater of Ub calc and Ub min				
Uncorrected Chimney Height	Um	mommentum					
from equation (15)	X	Y	Z				
factors =	**-3.2024264**	**5.6126843**	**0.0785303**				
logUm =	**0.7658139**		if M<1, X defaults to -3.7				
Um calc =	**5.83**	m	**Um minimum limit is 1**				
Um min =	**1.15**	m					
Um =	**5.83**	m	Um = greater of Um calc & Um min				
Ub =	**3.69**	m					
Corrected Chimney Height							
U =	**3.69**	m	U = lesser of Ub and Um				
for a low wide building (17) C =	H + 0.6(U + 2.5H - U)(1 - A ^-U/H)						
if Ub>Um, A = 1 & C =	H + 0.6U				**For other roof heights**		
Building height H =	5	m			H	H	H
A = Um/Ub =	**1.58**	A ^-U/H =	**0.7131886**		**4**	**5**	**6**
					Chimney height		
Corrected Discharge Height C =	**8.73**	meters above the ground			C	C	C
from equation (17)		- subject to an 8m minimum			**7.52**	**8.73**	**9.88**
Stack height above roof =	**4**	meters above the ridge	- subject to an 3m minimum				

Results of chimney height calculation

Pollutant	Gd	Bc	Pi	Used
Odour	0.01	0	619	<---[
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
-	1	0		
Sum of Acid gases	0	0	0	

Actual Duct conditions

Temperature in duct	35	deg. C
Efflux velocity	5	m/s
Moisture in emission	0	%
Duct diameter	0.4	m
Oxygen in duct	0	%
Oxygen at std condns.	0	%
Volume flowrate at discharge conditions	0.63	m^3/s
(Volume flowrate at standard conditions	0.56	m^3/s)

Buildings within 29 m of the chimney :

Height of building 1 =	5	m			
Effective width of building 1=	45	m	Heat release,Q =	0.02	MW
Height of building 2 =	0	m			
Effective width of building 2=	0	m	Ub=	3.69	m
Height of building 3 =	0	m			
Effective width of building 3=	0	m	Momentum, M =	2.89	m^4/s^2
Height of building 4 =	0	m			
Effective width of building 4=	0	m	Um=	5.83	m
Height of building 5 =	0	m			
Effective width of building 5=	0	m			

The corrected chimney height should be : 9 m