Huntingdonshire
DISTRICT COUNCIL

Application for a Permit for a Standard Part B Installation

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

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 are sending an application for a 'Part B' permit to a Local Authority under the Environmental Permitting (England and Wales) Regulations 2007 ("the EP Regulations").

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 as relevant The EP Regulations can be obtained from The Office of Public Sector Information, or viewed on their website at: http://www.opsi.gov.uk/stat.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 application to enable it to be processed further. When complete return to:

Environmental Protection Officer, Environmental Health Department, Huntingdonshire District Council, Pathfinder House, St. Mary's Street, Huntingdon PE29 3TN or e-mail: envhealth@huntsdc.gov.uk

If you require any help or advice on how to set out the information we need please contact us at the above address or telephone 01480 388363.

Other documents you may need to submit
There are number of other documents you will need to send us with your application. Each time a request for a document is made in the application 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 this reference number.

Using continuation sheets
In the case of the questions on the application 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
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 submitting the form electronically no duplicate copies are required.

A - Introduction

A1.1 Name of the installation

XAARJET Ltd,

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

1 Hurricane Close,
Ermine Business Park,
Huntingdon,
Cambs

Postcode: PE29 6XX.....Telephone...01223 423590

ordnance Survey national grid reference *8 characters, for example, SJ 123 456*

A1.3 Existing authorisations:

Please give details of any existing LAPC or IPC authorisation for the installation, or any waste management licences or water discharge consents, including reference number(s), type(s) and local authority:

Site waste Producer Information: NGT048 (04/12/2010 → 03/12/2011).....

Effluent discharge permit: ...Anglian Water – S0130XAARJKA (Doc ref: ACR164)...
.....

Please provide the information requested below about the "Operator", which means the person who it is proposed will have control over the installation in accordance with the permit (if granted)

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

..... XAARJET Ltd.

Trading/business name (if different)..... .....

Registered Office address :
Science Park.....

Cambridge.....

.....Postcode.....CB4 0XR.....

Principal Office address (if different).....

.....

.....Postcode:..... .....

Company registration number.....03375961.....

A2.2 Holding Companies
Is the operator a subsidiary of a holding company within the meaning of Section 736 of the Companies Act 1985?

No [√] Yes [ ]

Name of ultimate holding company.....XAAR plc

Registered office address.....Science Park.....

..... Cambridge.....

.....

.....Postcode.....CB4 0XR.....

Principal Office address (if different) .....

.....

.....

.....Postcode.....

Company registration number:.....3320972.....

A3.1 Who can we contact about your application?

It will help is 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 could be an agent or consultant rather than the operator.

Name.....RALPH KNIGHTLEY.....(others: Jerry Davies, Brian Howard).....

Position..... ENVIRONMENTAL COMPLIANCE.....

Address.....XAAR

ERMINE BUSINESS PARK

1 HURRICANE CLOSE.....

..... HUNTINGDON.....

.....Postcode...PE29 6XX.....

Telephone number.....01223 437890

Fax number.....

E. Mail address.....Ralph.knightley@xaar.com.....

B About the installation

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

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

In **Column 1, Box B** please identify any directly associated activities that are, or 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, for 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 new permit application

COLUMN 1a	COLUMN 2a
Activities in the Stationary Technical Unit	**Schedule 1 References**
Surface cleaning activities	**Section 7**
COLUMN 1b	**COLUMN 2b**
Directly associated activities	**Schedule 1 References**

B1.2 Why is the application being made?

☐ The installation is new

☑ The installation is existing, but changes to the installation or to the EP Regulations means that an LAPPC Part B permit is now required.

B.1.3 Site Maps

Please provide:-

* A suitable map showing the location of the installation clearly defining extent of the installations in red

Doc Reference : HARD COPY SITE PLAN WITH STACK LOCATIONS & WASTE IBC's AWAITING COLLECTION TO BE SUPPLIED. Note – IBC's on secondary containment.

* 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

Doc Reference ...Xaar Site Map 1

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 installation and activities and identify the foreseeable emissions to air from each stage of the process (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 ...Xaar Doc 2.....

B2.2 Once all foreseeable emissions have been identified in the proposed installation activities, each emission should be characterised (including odour) and quantified.

Atmospheric emissions should be categorised under the following

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

Xaar Map 3

If any monitoring has been undertaken please provide the details of emission concentrations and quantify in terms of mass emissions. If no monitoring has been undertaken please state this.

(Emission concentration = e.g. milligrams per cubic metre of air; mass emission = e.g. grams per hour, tonnes per year)

Xaar Doc 3

B2.3 For each emission identified from the installations' activities describe the current and proposed technology and other techniques for preventing or, where that is not practicable, reducing the emissions into the air. If no techniques are currently used and the emission goes directly to the environment, without abatement or treatment then this should be stated

Doc Reference: Xaar Doc 4 .....

B2.4 Describe the proposed systems to be used in the event of unintentional releases and their consequences. This must identify, assess and minimise the environmental risks and hazards, provide a risk-based assessment of any likely unintentional releases, including the use of historical evidence. If no assessments have been carried out please state.

Doc Reference ..... Xaar Doc 2 .....

B2.5 Describe the proposed measures for monitoring all identified emissions including any environmental monitoring, and the frequency, measurement methodology and evaluation procedure proposed (e.g. particulate matter emissions, odour etc). Include the details of any monitoring which has been carried out which has not been requested in any other part of this application. If no monitoring is proposed for an emission please state the reason.

Doc Reference ..... Xaar Doc 5 .....

B2.6 Provide detailed procedures and policies of your proposed environmental management techniques, in relation to the installation activities described.

Doc Reference: Site registered to ISO14001:2004 – Cert No. EMS559830

B3 Impact on the Environment

B3.1 Provide an assessment of the potential significant local environmental effects of the foreseeable emissions (e.g. is there a history of complaints and/or is the installation in an air quality management area?)

Doc Reference .....Xaar Doc 2, Xaar Doc 6, Xaar Doc 7 .....

B3.2 Are there any sites of special scientific interest (SSSIs) or European protected sites that are within either

- 2 kilometres for an installation which includes Part B combustion, incineration (but not crematoria), iron and steel, and non-ferrous metal activities, or
- 1 kilometre for Part B mineral activities and cement and lime activities, or
- ½ a kilometre for all other Part B activities 2 kilometres of the installation?

Please give names of the sites

No [√] Yes [ ]

Doc Reference: .....Xaar Map 4.....

AREAS FURTHER TO THE NORTH OF ERMINE BUSINESS PARK HAVE BEEN IDENTIFIED AS POSSIBLE SSSI's

B3.3 Provide an assessment of whether the installation is likely to have a significant effect on such sites and, if it is, provide an assessment of the implications of the installation for that site, for the purposes of the Conservation (Natural Habitats etc) Regulations 1994 (see appendix 2 of Annex XVIII of the General Guidance Manual).

Doc Reference .....Xaar Doc 5.....

MONITORING OF SOLVENT EMISSIONS FROM SITE HAS BEEN ASSESSED AS HAVING A LOW RISK IMPACT ON THE ENVIRONMENT

B4 Environmental Statements

B4.1 Has an environmental impact assessment been carried out under The Town and Country Planning (Environmental Impact Assessment)(England & Wales) Regulations 1999/293, or for any other reason with respect to the installation? If there has been no such assessment, have there been any screening opinions or directions?

No [√] Yes [ ]

Please supply a copy of the environmental impact assessment and details of any decision made

Doc Reference: .....N/A.....

B5 Additional information

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

Doc Reference .....

C - Fees and Charges, Information Handling, and Declaration

C1 Fees and Charges

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

C1.1 Please state the amount enclosed as an application fee for this installation:

For the local authority

£ 1579 (cheques should be made payable to Huntingdonshire District Council)

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

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

.....PUR-016263-1.....

C2 Annual subsistence charges

If we grant you a permit, you will be required to pay an annual subsistence charge, failure to do so will result in revocation of your permit and you will not be able to operate your installation.

C2.1 Please provide details of the address you wish invoices to be sent to and details of someone we may contact about fees and charges within your finance section.

..... Xaar.....

..... Science Park

Cambridge.....

Postcode:.....CB4 0XR.....Telephone:...01223 423663.....

C3 Confidentiality

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

No [√] Yes [ ]

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

C3.2 Is there any information in the application 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 application form to the Secretary of State/ Welsh Ministers for a direction to exclude information on grounds of national security.

C4 Data Protection

The information you give will be used by the local authority to process your application. 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 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
- intentionally to make a false entry in any record required to be kept under any environmental permit condition
- with intent to deceive, to forge or use a document issued or required for any purpose under any environmental permit condition.

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

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.

Signature..... .....

Name..... Alex Bevis .....

Position: Company Secretary .....Date.....19/7/11.

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:...XaarJet Limited.....

Signature.....

Name.....Alex Bevis.....

Position.....Company Secretary Date....19/7/11....

** 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.*

Documents requested to be included with this application are as described below.

Para. Ref.	Doc Ref	Description of Requirement	Description of Document Content
	Xaar doc 1	*Outline of Xaar operation*	Brief information on what Xaar produces and relevant information on why the application is being made.
B.1.3	Xaar site map 1	*Map showing location of site with site outline in red*	Area map from Google maps showing site location
B.1.3	Xaar map 2 A0 hard copy	*Plan showing site activities*	Detailed site plan showing manufacturing processes
B.2.1	Xaar doc 2	*Aspects & Impacts register including risk assessment*	Clause 4.3 & of 4.3.1 of ISO14001:2004 and aspects and impacts register showing methodology for calculating impact risk from process assessment.
B.2.2	Xaar map 3	*Stack location & notation stating emissions*	Schematic of site showing stack location and stating emissions from each. Also shows waste holding area.
B.2.3	Xaar doc 3 Xaar doc 4	*Proposal for reducing emissions*	Evaluation of solvent usage and plan for reduction and recovery. Includes solvent usage graph.
B.2.4		*Emergency procedures to minimise effect of releases*	The possibility of unplanned releases are minimised by risk assessments, a number of staff are trained in the use of spill kits and the kits are located around the site
B.2.5	Xaar doc 5	*Monitoring of all identified emissions*	Results from monitoring of stack emissions
B.2.6	Xaar doc 6 Xaar doc 7	*Environmental management system*	Copy of certificates for ISO14001:2004 & ISO9001:2008
B.3.1		*Provide assessment of significant environmental effects*	Assessments included in Aspects & Impacts register covered in the documents used in B.2.1. Regular site inspections undertaken along with daily walk rounds.

B.3.2	Xaar map 4	*Local SSSI*	Map from internet showing local SSSI's
B.3.3		*Possible effects on identified local SSSI*	Nearest SSSI is more than ½ kilometre away and the measured emissions are unlikely to have an effect.
B.4.1		*Outcome of any environmental impact assessment for local planning*	None have been required.
B.5		*Additional information*	

XAAR JET LIMITED

Xaar produce high quality inkjet printer heads for use in OEM printers.

All print heads are tested using inks and before shipment are required to be cleaned; some of the inks are solvent based and therefore require a solvent to carry out this process.

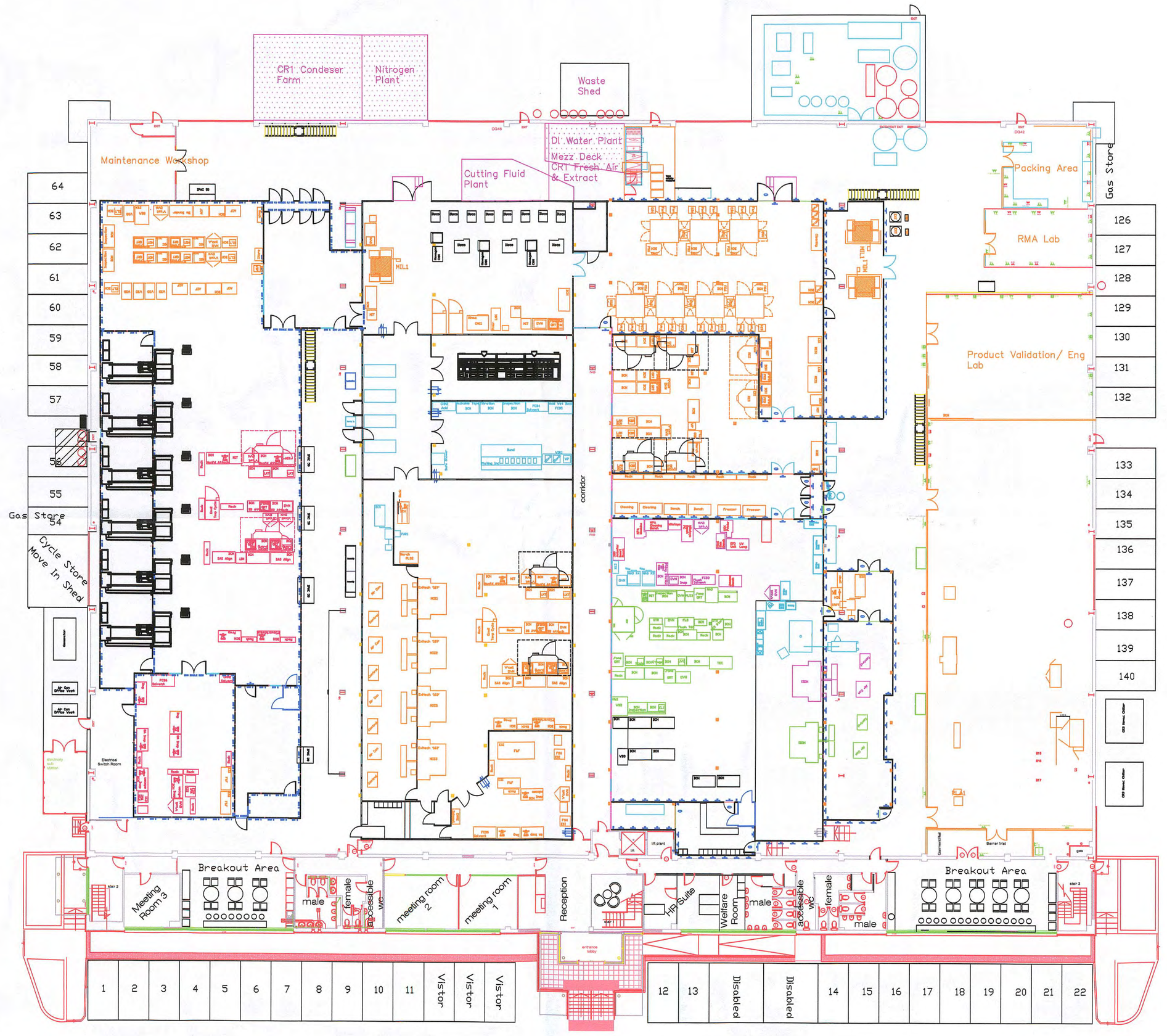
The surface cleaning process is a closed cycle pressure clean that collects the returned solvents for recycling in other processes. Whilst a high proportion of the used solvent is collected there is an amount that is classified as “fugitive”.

The solvent used in the flushing process is isopropylalcohol (IPA), this is a flammable substance but is not in the top tier of solvents and therefore has a requirement to register when the fugitive value is in excess of two tonnes.

XAAR SITE MAP 1.

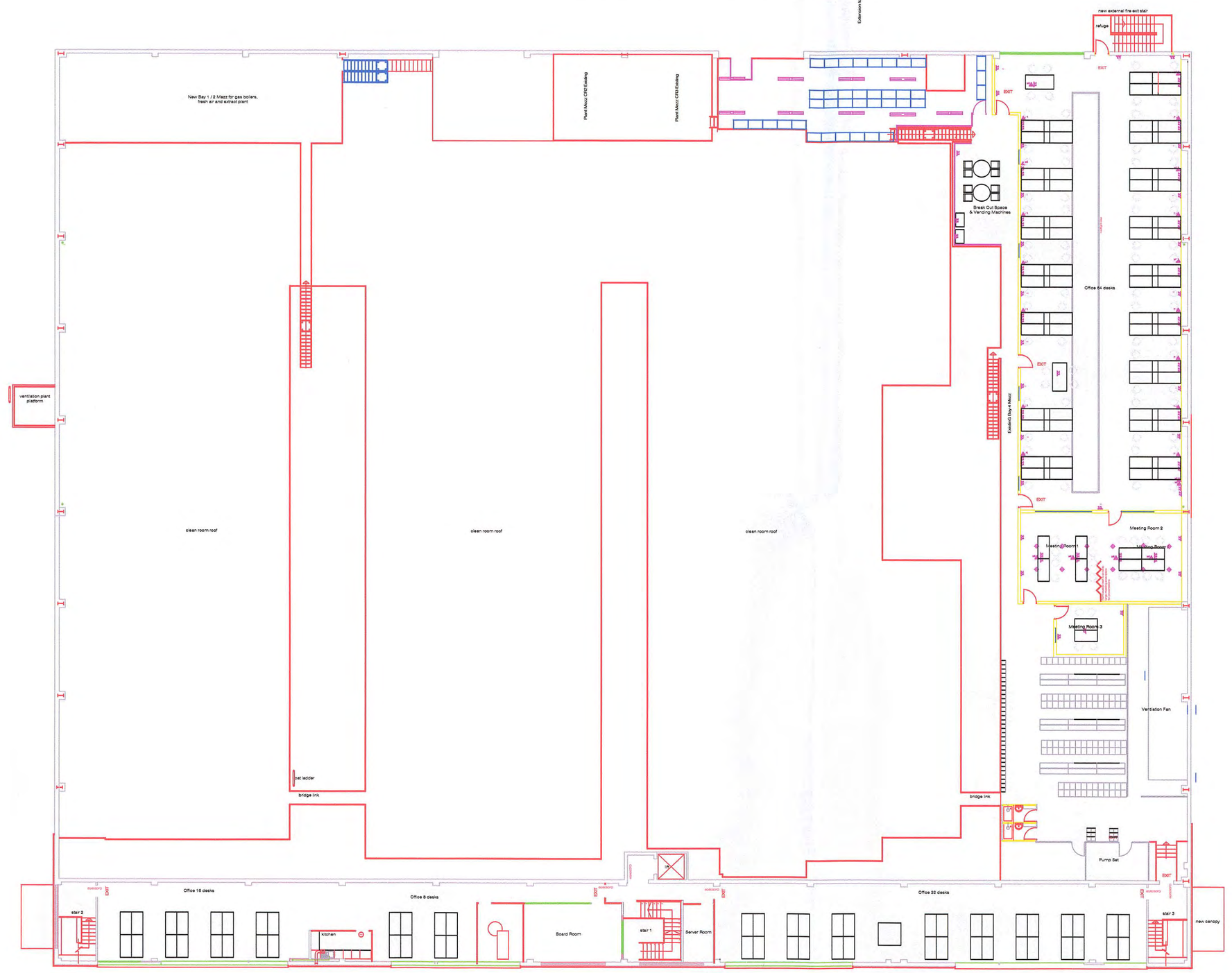
To see all the details that are visible on the screen, use the Print link next to the map.

Ground Floor



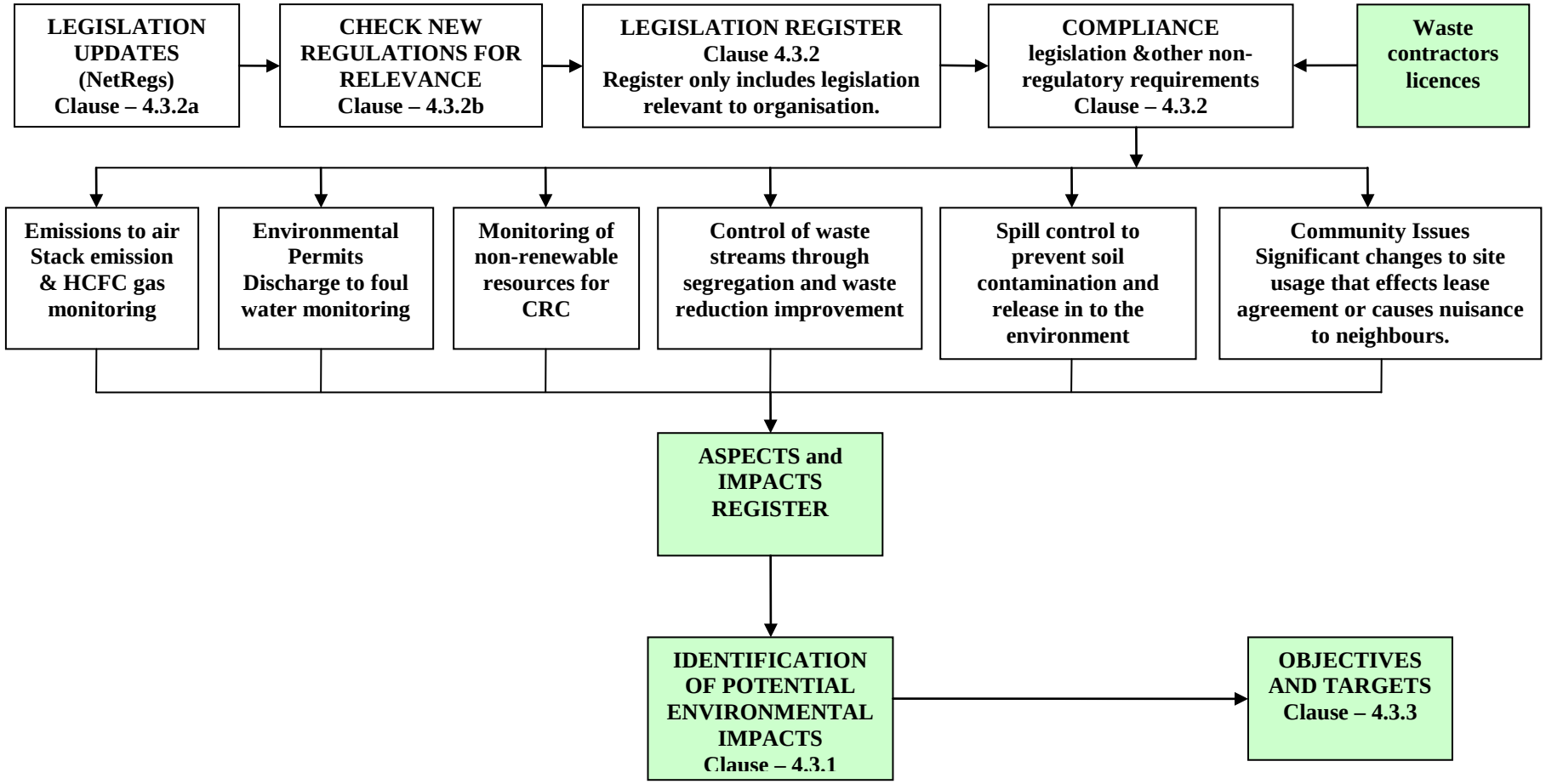
GROUND FLOOR PLAN

First Floor

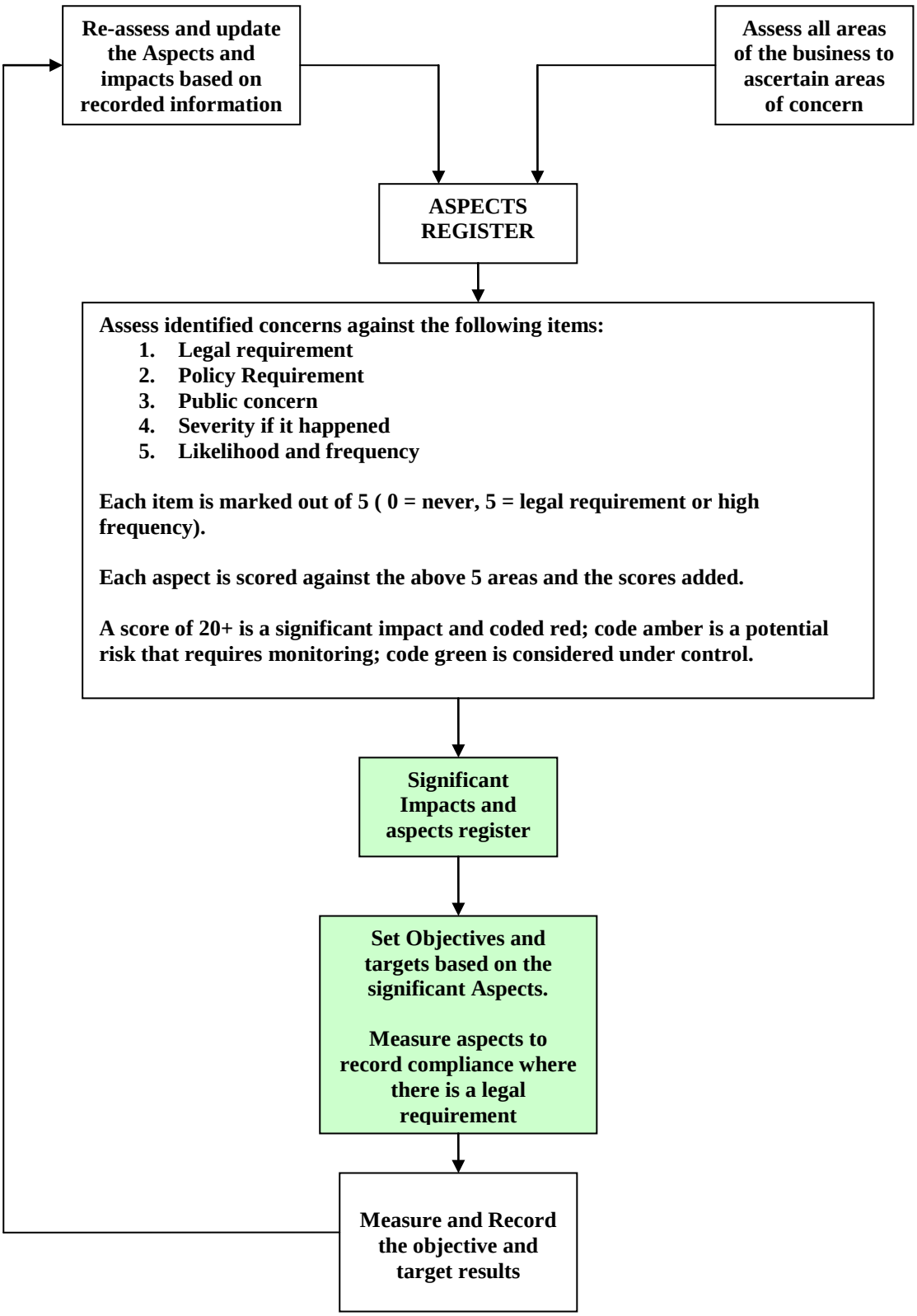


client	XAAR
project	1001 Uplift
title	Xaar - 1 Hurricane Close First and ground floor proposed layout
job no.	1001JDS
rev.	E3
date	16/01/2011
drawn by	JDavies

4.3 – PLANNING – Rev C : July 2010



4.3.1 - Aspects & Impacts – Rev C : July 2008



SIGNIFICANT ASPECTS – March 2011

significant aspect > 20 RED	Possible Improvement opportunity > 15 <19 AMBER		Acceptable Risk level but may be able to improve <15 GREEN						June 2011
Aspect	**Impact**	**Legal**	**Policy**	**Public Concern**	**Severity of outcome**	**Frequency of operation**	**Historical incidences**	**Total**	**Control Measures**
NO HIGH RISKS DURING NORMAL OPERATING CONDITIONS									
Production of non-hazardous waste – normal	Air Pollution	**5**	**0**	**1**	**4**	**5**	**0**	**15**	Incineration results in 26% of waste – used for power generation
	Water pollution	**5**	**0**	**3**	**4**	**3**	**0**	**15**	Nickel to waste – change of process change removes nickel wash from effluent.
	Land Pollution	**5**	**0**	**3**	**5**	**2**	**0**	**15**	The only land pollution is 3% of waste to landfill
	Amenity	**5**	**0**	**2**	**2**	**4**	**0**	**13**	Small amount of blown paper from skips
Production of hazardous waste - Abnormal/Emergency	Air Pollution	**5**	**0**	**3**	**4**	**3**	**2**	**17**	internal air quality monitoring through emergency release procedures
	Water Pollution	**5**	**0**	**3**	**4**	**3**	**0**	**15**	Separation and disposal of high risk water to waste collection
	Land Pollution	**5**	**0**	**3**	**5**	**2**	**2**	**17**	Controlled waste holding area, bunded pallets for hazardous chemical waste. Reduce internal transportation of hazardous - done. Acid spill fully contained even though not completely controlled
	Amenity	**5**	**0**	**3**	**2**	**4**	**0**	**14**	If skip were t be left open then blown waste would increase.
Product Design	General Impact	**5**	**4**	**5**	**2**	**5**		**21**	Design is controlled by a separate site. No controls from Huntingdon.
Product Design	Renewable/Non-Renewable Resources	**5**	**0**	**2**	**2**	**5**	**3**	**17**	Continual improvement and attention to design (WEEE/RoHS). Supplier grading only use compliant suppliers. Continuous improvement of production processes.
Manufacturing Processes	Employee H&S,	**5**	**0**	**5**	**2**	**5**		**17**	Design has a big impact on the manufacturing processes but manufacturing has a lower impact because of the controls in place.
Solvent usage - Abnormal/Emergency	Air pollution	**5**	**0**	**3**	**4**	**5**	**0**	**17**	Appropriate emergency procedures, there have been no incidences of major spillages

High Risk Substance usage - Emergency	OHS risks and environmental contamination	**5**	**0**	**3**	**2**	**3**	**0**	**13**	Processes are risk assessed and actions implemented / PPE where required. But shortfalls have been experienced.
	Impact	**Legal**	**Policy**	**Public Concern**	**Severity of outcome**	**Frequency of operation**	**Historical incidences**	**Total**	**Control Measures**
Employee and local area	Health & Safety	**5**	**2**	**3**	**3**	**3**	**1**	**17**	Shortfalls found during audits around emergency planning – spill training undertaken.
Process Gas usage. Emergency release	Toxic, Flammable, Corrosive, global warming	**5**	**0**	**3**	**4**	**1**	**0**	**13**	The use of high risk gasses is controlled by training, high level risk assessment and implementation of findings carried out
Transportation	Renewable/Non-Renewable Resources, Congestion, Public health, Global warming	**2**	**4**	**2**	**4**	**5**		**17**	Efficient planning of journeys , conference facility. Supply issues need addressing.
Packaging usage	Renewable/Non-Renewable Resources	**5**	**1**	**1**	**1**	**1**		**9**	Monitoring the amount of packaging – 2009 way short of the legal requirement to measure – 80% recycling of cardboard.
Noise emission	Public amenity & OH&S	**5**	**0**	**1**	**1**	**0**	**0**	**7**	No external external to building plant room requires control – ear defenders to be used
Buildings	Planning permission etc	**5**	**1**	**2**	**2**	**1**	**1**	**11**	Adherence to T&C Planning Act and landlord permissions
Buildings	Maintenance	**5**	**3**	**2**	**3**	**3**	**0**	**16**	Asbestos survey undertaken – none on site – building works permit to work and risk assessments carried out
Electricity usage	Non-Renewable Resources	**0**	**4**	**3**	**2**	**5**		**14**	Monitoring the use of electricity – reduce scrap during production process. Limited reduction process.
Town Gas usage	Non-Renewable Resources	**0**	**1**	**2**	**2**	**2**		**7**	Monitoring of the use of gas – gas heating being removed from site
Water usage	Conservation of resources	**0**	**4**	**3**	**2**	**5**		**14**	Monitoring water usage. Utilising water efficiency measures wherever possible. Rain water harvesting could be an option to reduce water usage.
Conservation, Wild life & Biodiversity	Effect on wildlife in the area	**5**	**5**	**2**	**2**	**6**		**16**	Xaar currently have no policy on preservation of wildlife. The risk from Xaar activities is amber but has been shaded red as no current policy exists. ACTION FOR 2011

Evaluation Criteria – July 2008

	5	4	3	2	1	0
Legislation	There is a legal requirement	There is a date for the requirement to become legal	There is expected to be a future legal requirement	Good working practice dictates implementation	No Legal requirement but there is a benefit to the organisation in implementing	There is no legal requirement and there is no benefit to the organisation
Policy	There are no controls over the process	The process is not monitored but does have procedures in place	The process is monitored but does not have formal processes	There is no formal training programme but there is a procedure and monitoring takes place	The process is covered by procedures, work instructions, training and monitoring	The process is covered by procedures, work instructions, training and monitoring with full evidence of corrective actions
Public Concern	There is global concern and the outcome would have serious detrimental affect to the company	Global concern but no adverse affect to the company	Local interest and an adverse affect to the company	Cost benefit or good publicity to the company	Local interest but no adverse affect to the company	No public interest and no detrimental effect or cost to the company
Severity of outcome	Known detrimental effect to the environment and adverse effect to company profile	Known detrimental effect to the environment	Some detrimental effect and product is in short supply	No detrimental effect but product is in short supply	No detrimental effect and product is plentiful	No known detrimental effect and fully renewable sources of supply at low cost
Frequency of operation	Process occurs many times a day	process occurs on average once / day	process occurs on average once / week	process occurs on average once / month	process occurs infrequently – once / year	process rarely occurs
Historical frequency of incident	Problem occurs regularly and no improvements have been investigated	Heresay – problem has occurred but no evidence of investigation	problem has occurred and is under investigation but remains unresolved	Incident has never occurred but near misses have been recorded	Incident has never occurred and is unlikely	Incidence has been investigated and corrective actions have been implemented
	↑	↑	↑	↑	↑	↑
	Any assessment that falls into this column will require action as a significant impact	Any assessment that falls into this column may require action as a significant impact	Assessments that fall in this column may be significant	Assessments that fall in this column may require action that could be beneficial to the company	Assessments that if resolved may be beneficial to the company or they can improve the value of actions taken in other areas of significance.	Assessments that fall in this column are insignificant but action may reduce or nullify the requirement for action required in other significant areas

XEMS 0703
Revision C

Risk assessments are undertaken and action and control measures are taken where the impact on the environment is seen to be at unacceptable level.

High risk out of control aspects are colour coded red.

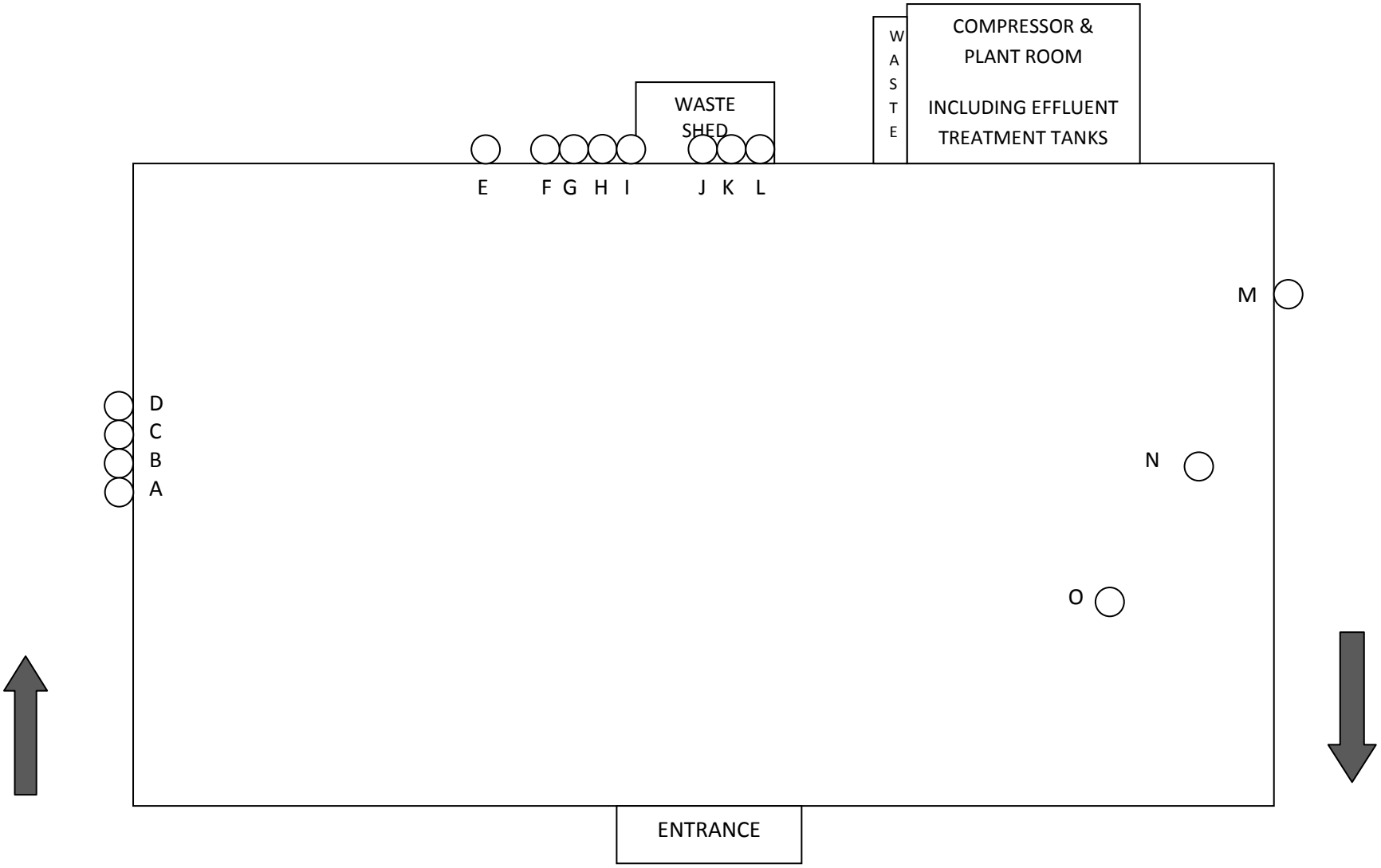
Where there is no or incomplete policy the outcome is deemed to be high risk even though the actual risk may be lower.

Aspects that are in control but would have an environmental impact are in control are colour coded Amber.

Green coded aspects are those that are in control and have a low likelihood of a release to the environment.

STACK LOCATION & POSSIBLE OUTPUT

Stack Referenece	Description of use
Side Entrance - A	New Clean Room 1 : not yet commissioned
Side Entrance - B	New Clean Room 1 : not yet commissioned
Side Entrance - C	New Clean Room 1 : not yet commissioned
Side Entrance - D	New Clean Room 1 : not yet commissioned
Building Rear - E	New Plating line : not yet commissioned
Building Rear - F	Clean Room 2 : Emergency gas exhaust for laser
Building Rear - G	Clean Room 2 : Room exhaust, VOC's
Building Rear - H	Clean Room 2 : Existing plating line
Building Rear - I	Clean Room 2 : Water vapour from machining deionised water cutting fluid
Building Rear - J	Clean Room 3 : Water vapour from machining deionised water cutting fluid
Building Rear - K	Clean Room 3 : Room exhaust, VOC's
Building Rear - L	Clean Room 3 : Emergency gas exhaust for laser
Side Exit - M	Validation area : not yet commissioned
Side Exit - N	Assembly area : Room exhaust, VOC's
Side Exit - O	Laser Gas store : Emergency gas exhaust

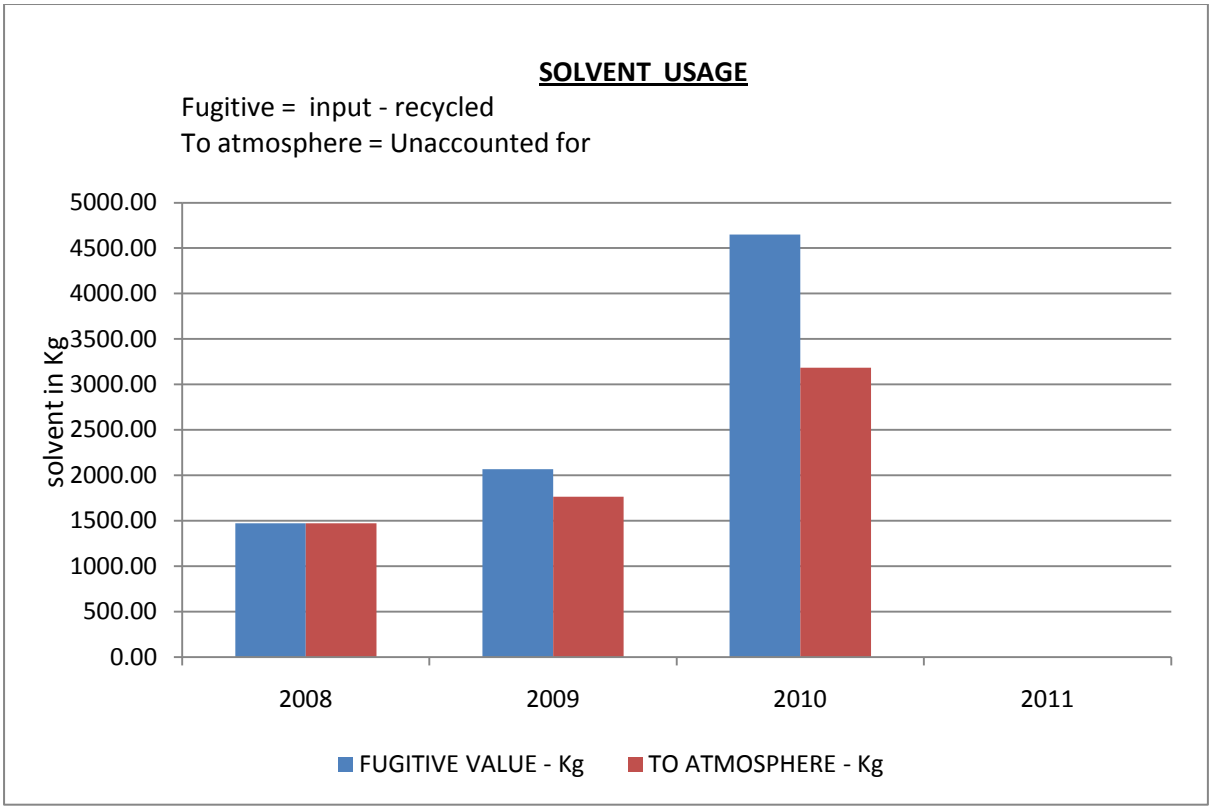

COMPRESSOR &
PLANT ROOM
INCLUDING EFFLUENT
TREATMENT TANKS
WASTE
WASTE
SHED
E
F G H I
J K L
M
D
C
B
A
N
O
ENTRANCE

Solvent usage

Solvent usage is normally measured as a fugitive value, the amount that is unaccounted for between that booked into production and the amount sent for recycling.

In the graph below the amount “to atmosphere” is less the solvent wipes collected for power generation incineration.

The unaccounted value can be lost through evaporation, through windows & doors and through spillages - although most of the spillages will be captured through clean up wipes.



EVALUATION PLAN FOR SOLVENT USE AND RECOVERY

The use of solvents is limited to the following:

1. IPA - F, Xi, R11- R36- R67
2. Acetone - F, Xi, R11- R36- R66- R67
3. Methanol – F, T, R11, R39, R23/24/25

IPA

Iso-propanol is the main solvent used for surface cleaning operations.

Acetone

The use of Acetone is limited and the usage and fugitive value is incorporated in with IPA for overall solvent usage.

Methanol

The use of methanol is very limited and is only used by equipment support engineers for the cleaning of optical lenses used in lasers.

The quantity consumed annually is extremely small and although there is a total loss through evaporation the loss does not add significantly to the overall fugitive value.

Solvent Usage Calculations

For solvent usage calculations the quantities used of Acetone and IPA are the major contributors so these are the only substances used for the calculations.

Surface Cleaning Processes

1. The 1001 head uses a final closed cycle flushing system with IPA solvent.
2. Proton actuator attach uses IPA in a flushing rig that is partially enclosed.
3. General surface cleaning under fume hood uses IPA & Acetone.
4. General cleaning using IPA in open workshop.

5. General cleaning using Acetone in an open workshop.

The purity of both these solvents is approaching 100% and is not diluted with water.

The increasing production and hence solvent usage is based around the 1001 product and is controlled within closed cycle flushing systems.

Solvent waste

Solvent usage is measured from stock purchased, and volume issued to production.

Solvent waste is measured as the amount collected by waste carriers for use as an alternative fuel at a cement producing facility; in addition to this there is an amount that can be estimated from the wipes that are collected for incineration.

The solvent used is taken to be the difference between the amount issued to production and the amount collected as liquid waste, the fugitive value.

The activated carbon filters in fume cabinets are not evaluated for weight on changing during servicing.

Stack emissions are measured for VOC emissions, the stacks are separated and solvent content can be evaluated.

Continuous Improvement Activities

Flushing activities to be closed cycle whenever possible.

Recycling and reuse, solvent is used as an alternative fuel at a cement works but there is a further option of an on-site distillation process that would enable the waste solvent to be reused. Under SED regulations this would not change the fugitive value projections.

Opportunities: evaluate open area usage of solvents.

The following are extracts from the stack emissions testing for VOC's. Two checks have been undertaken, one in 2009 and the other more recently in 2011.

The original tests were carried out with one clean-room in operation and with relatively low levels of production. Since the first emission testing measures have been taken to reduce the amount of VOC's escaping to the environment via the stack extract system.

Stack 3 (Clean-room 2)

The results below were taken on the 5th August 2009. VOC levels were measured once a second for more than seven hours. All VOC results have been calculated using reference conditions 273°C and 101.3 KPa

Sample duration	VOC (as C) results in mg/m3		
	Average	Maximum	Minimum
06:26 to 13:30 hrs.	0.4	14.2	<0.1

The online FID indicated that the VOC levels were cycling every 5 to 10 minutes with very short duration and low level spikes of solvent. Typically a peak value would last for 2 to 5 seconds around which there would be a 30 to 60 second much lower tail.

Stack 3 (Clean-room 2)

The results are given in table form below. All samples were taken on 17th May 2011. All VOC results have been calculated using reference conditions 273 °C/ 101.3 KPa.

Sample duration	VOC (as C) results in mg/m3		
	Average	Maximum	Minimum
07.34 to 12.51 hrs.	8.3	14.9	<0.1

The on-line FID illustrated that the VOC levels were slightly higher than for the previous survey conducted in 2009.

VOC stack (Clean-room 3)

The results are given in table form below. All samples were taken on 17th & 19th May 2011. VOC results have been calculated using reference conditions 273 °C/101.3 KPa.

Sample duration	VOC (as C) results in mg/m3		
	Average	Maximum	Minimum
13.17 to 14.57 hrs. 12.20 to 15.40 hrs.	0.3	2.6	<0.1

The on-line FID illustrated that the VOC levels were low over the five hour's of monitoring.

Back end assembly (workplace air quality measurements)

On the 10th June 2010 air quality monitoring in the workplace was undertaken for a number of substances and included in this was VOC's from print testing. Flow rate through test pump were 140 to 250ml/m and the analysis was with gas chromatography.

A number of samples were taken at various points in the workplace over a single shift	EH40 TWA = 5 mg/m3		
	Average	Maximum	Minimum
	0.125	0.15	<0.1

Back end assembly VOC stack
The results are given in table form below. All samples were taken on 19th May 2011. All VOC results have been calculated using reference conditions 273 ^{o}C/ 101.3 KPa.

Sample duration	VOC (as C) results in mg/m3		
	Average	Maximum	Minimum
07.07 to 12.07 hrs.	0.6	1.8	<0.1

The on-line FID illustrated that the VOC levels were low over the five hour's of monitoring.

COMMENTS

4.1 The results show that, at the time of sampling, the seven extract stack's were emitting low, or less than concentrations for the gases monitored and were therefore well controlled.

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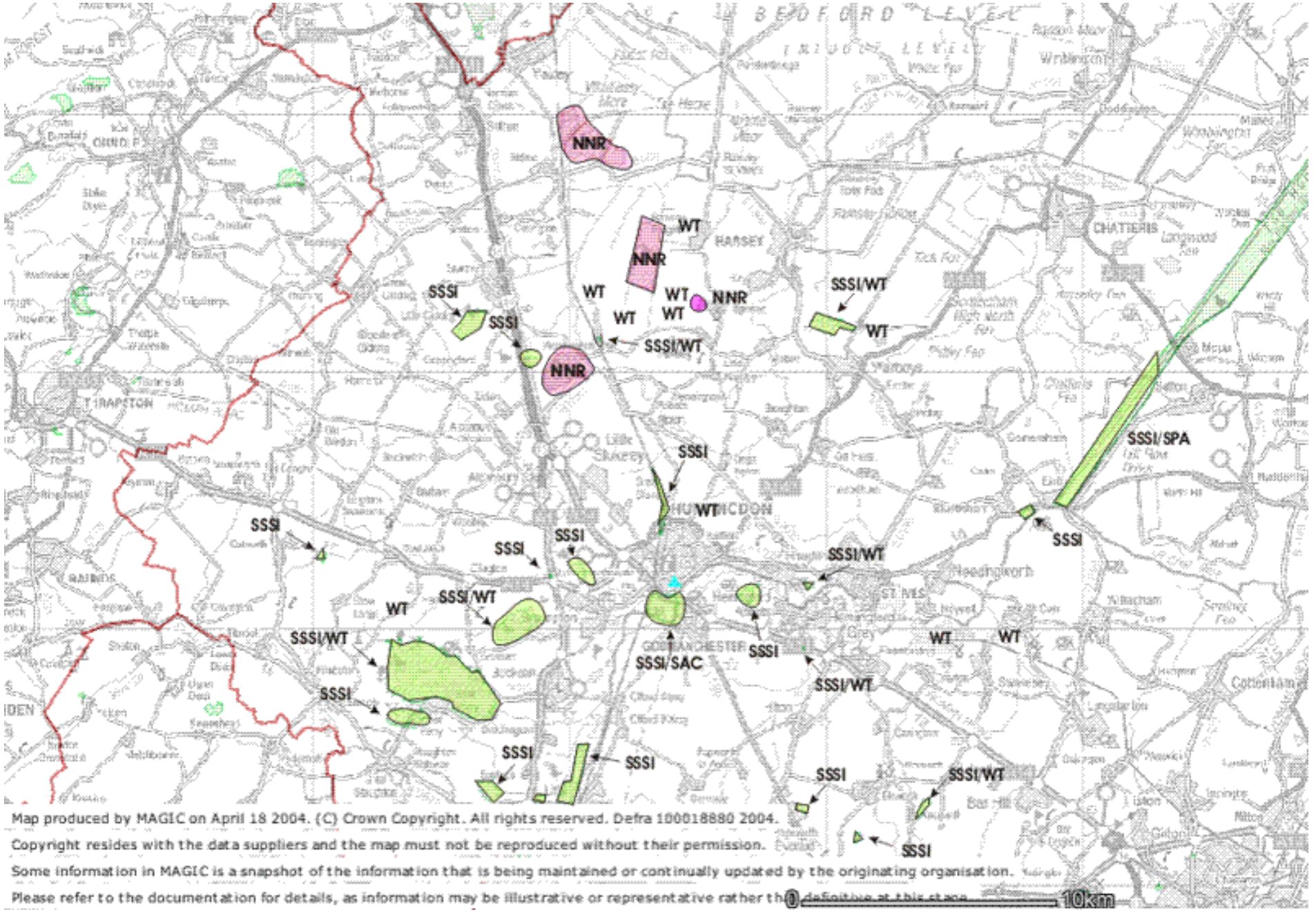
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Originator .....: Ralph Knightley
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Vendor reference ..:

Mode of delivery :
Payment terms .: NET 30 DAYS
Supplier A/C No. : 1933

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TOTAL EXCL. VAT **1,579.00 GBP**

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